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TRANSACTIONS

OF THE

IOWA STATE MEDICAL SOCIETY

VOLUME XXII

FIFTY-THIRD ANNUAL SESSION

1904

CEDAR RAPIDS, IOWA:
REPUBLICAN PRINTING CO., PRINTERS
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FIFTY-THIRD ANNUAL MEETING

OF THE

Iowa State Medical Society

HELD AT

Des Moines, Iowa, May 19, 20 and 21, 1904

MAY 19, MORNING SESSION

The Society met in Our Circle Hall and was called to order at 10:30 A. M. by the President, J. A. Scroggs, of Keokuk.

Prayer was offered by the Right Reverend J. A. Wirt, of Des Moines.

Wilton McCarthy, chairman of the Committee on Arrangements, made a verbal report.

ADDRESS OF WELCOME BY MAYOR MATTERN

Mr. Chairman and Members of the Iowa State Medical Assn:

It is a pleasing task for me to assure the members of this Society that they are welcome to our hospitality. We are pleased to have as our guests on this occasion the members of this Society, representing a profession so beneficial to mankind. I can say no more than to wish your deliberations shall be profitable and productive of much good. I will take no more of your valuable time but again let me assure you, each and every one, that you are welcome to the very best we have and I hope that your sojourn in this city will be so pleasant that you will soon want to return.

RESPONSE BY D. C. BROCKMAN

Honorable Sir:

On behalf of the members of the State Medical Society I wish to thank you for the many kind words of welcome that you have so generously spoken. I want to thank you especially, because we feel you meant what you said in welcoming us to Des Moines. Past experience always leads us to believe we

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are always welcome in Des Moines. For the past 25 years I have been coming to Des Moines on an average of once a year to attend meetings of this kind and I have not yet met anything but the warmest kind of a welcome from the people of this city. In fact we look upon this city as one of the hospitable places of this great commonwealth and feel that it is a place where we are always in the hands of "friendly Indians." The medical-men of Des Moines are typical pictures of God's noblemen. I know of no class of men anywhere who will excel the medical profession of Des Moines in furnishing good cheer and as we speak of the medical profession of Des Moines our hearts are bowed down with sorrow and sadness when we think of the loss this association has sustained since last convening. Three of our genial, debonaire members have gone from us. I believe I am but voicing the sentiment of every physician in the great State of Iowa when I say our hearts go out in sympathy to the bereaved wife, to the stricken parents of our deceased brother, Crayke Priestley. I say our hearts go out to them in sorrow and sympathy and we can but pray to Almighty God to give them courage to bear their affliction.

If you will look over the audience this morning, you will find a very different audience than usually meets with us at the first meeting of this Association. Usually we have thirty or forty members present on the first morning. Usually we have from 150 to 250 present during the sessions. Today we have more than 1400 paid up members of this Association, the result of the reorganization of this Society in accordance with the plans of the American Medical Association. I hope you will agree with me in complimenting the gentlemen who have worked so faithfully and zealously to bring about this magnificent result and I congratulate the members of this Society on the result and upon the very evident progress and future growing results that will come from this reorganization. We have brought up, by this reorganization, a society of five or six hundred to one of more than fourteen hundred and the end is not yet. By the harmonious workings of this Society we trust that in another year we will have added one thousand more members to this organization. With harmony, with a binding together in unity of such a number of influential citizens of this state the Iowa State Medical Society will be one of the strongest factors in the state for the good of humanity, for the good of its citizens and for the health of the state.

Several members have stated to me this morning, as I met them, that this reorganization, they believed, was going to be a success, although it was yet an experiment. I want to correct any such an impression you may have had; it is not an experi-

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ment. Alabama has been working under this constitution or one like it, for more than ten years and in that time has doubled her membership more than four times. There has not been a state in the Union which has adopted a constitution like ours but what has made increases in her membership from one to four fold. No society has yet talked of disbanding or returning to the old constitution. Today we have brighter prospects and more prospects of success than we ever had before. The only thing which mars the perfect happiness of the occasion is the fact that we still have a few of our old friends who are still opposed to this. They seem to be afraid it will be a success and would rather return to the flesh-pots. To such I want to say if they will desist from any interference, allow the smooth placid harmony that is denoted upon your faces today to have full sway, that nothing but success will come from this meeting, and that this will be but the first of a series of meetings of this Society, sir, until when we come to Des Moines, for these meetings, you must prepare, not for 150 to 200 of a membership to take care of, but from 1,000 to 2,000. This we tell you that you may notify the people of Des Moines that when we meet with you hereafter, they must make preparations to care for a large number of delegates. I thank you, sir, for your kind words of welcome.

Upon motion the meeting here adjourned until 1:30 May 19, 1904.

MAY 19. AFTERNOON SESSION

PRESIDENT'S ADDRESS

Members of the Iowa State Medical Society:

The position our fair and beautiful state occupies in the constellation of the American union is certainly one to which we point with patriotic pride. No state exceeds ours in intellectuality of its citizens, the percentage of illiteracy being as low as any other state, if not lower. No state has more patriotic citizens, braver, honest sons, fairer or more virtuous daughters. Endowed with a soil so fertile the farmer has but to tickle the surface to cause the land to laugh in fatness; barns, granaries and dairies filled to almost bursting, pastures and fields covered with flocks and herds, in short a commonwealth, teeming with all the essential food products necessary to the proper sustenance in health and vigor of all her citizens. In the 46 years in which the writer hereof has been a resident of this state, on three occasions, failures of crops in neighboring states have produced

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conditions in which gaunt famine stalked abroad in the land; yet, in all these years our beloved Iowa produced abundance for the supply of every need of her own people, and contributed with lavish hand, and without demand of money or price, to the crying needs of the citizenship of her unfortunate sister states. Again salubrity, healthfulness of climate is the universal boast of every true Iowan; and it is not strange our state has been populous and wealthy, and is in possession of resources capable of producing treasure illimitable. It is not strange that ignorance and illiteracy have been banished to so great a degree, and that intelligence and education prevail universally. It is not strange that in this eventful year, we should become somewhat boastful. A century ago the vast domain, from which our state has been carved was a howling wilderness, populated for the most part by hordes of savages, penetrated by the arts of civilization in a limited area only in the extreme southern portion; and the site of the beautiful city in which we are gathered today, beneath the shadow of the gilded domes of our beautiful Capitol, was occupied by a solitary trading post, visited by the adventurous trapper, or wily savage.

In this 101st year of the Louisiana Purchase, the eyes of the civilized world are directed to the festal point, and every sea is being traversed by numberless argosies laden with works of art, and the products of the varied industries of the world, for exhibition at the famous Exposition of this triumphal year. What a conquest accomplished by the immortal Jefferson. A mighty Empire, not by pomp of war or devastating army, but by the gentler arts of peace. But in all candor, with all the reasons for congratulation, as to the wonderful accomplishments for the betterment of condition and consequent happiness of the human race, has the State of Iowa, in the light of modern achievement and discovery done her whole duty, in that which is most vital to her citizens' life and health? Emphatically no. In the boasted progress of the latter half of the 19th century, that attained in medicine is far greater than in any other field of research. In fact, I do not believe I am boastful, when I say that the medical profession is a quarter of a century in advance of the state in matters sanitary, notwithstanding their much vaunted intelligence.

We know, that tuberculosis *is* an infectious disease. The establishment of that fact marks an epoch in human progress, and the results attained, will prove one of the greatest boons to the human race. The moment tuberculosis was classed an infectious disease, that moment it was known that it could be prevented. It was also discovered that many cases are curable. In several European States Sanitoria have been erected to treat

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these cases, in a modern scientific way, and after five years it is found the mortality has been reduced fifty percent. This has been demonstrated time and again, yet when a bill was introduced in our last legislature, asking that a modern Sanitarium be provided for tuberculosis patients; and devoted physicians spent much time, and at their own expense, explaining and demonstrating the necessities for its construction, it was gently turned down and $1,000.00 appropriated to investigate the subject during the next two years. It is gratifying however to be able to state that something is being accomplished in several other states, Ohio, New Jersey and Massachusetts have provided for state hospitals while the city of Boston has appropriated $150,000 for a city tuberculosis hospital.

It is estimated that 160,000 people die annually in the United States from tuberculosis. The economic value of a life to the state, as a producer, is said to be conservatively estimated at $5,000.00 and on that basis the clear loss to the United States by reason of the mortality of tuberculosis last year was 800 millions of dollars. If that mortality could be reduced one-half, it would be a profitable investment for each state to spend at least one million dollars annually for the support of these Sanitoria.

When it is conceded that 30 and a fraction percent of all deaths between the ages of 15 and 44 are due to a preventable, and to certain degree a curable disease, as is the case with tuberculosis, and the state refuses to take the matter in hand, there is certainly a condition of Egyptian darkness due to apathetic ignorance. Dr. Lewis, the State Health Commissioner of New York in his last annual report made a month ago says, "If the monetary value of a human life is assumed to be $5,000, the deaths from but five of the preventable diseases during 1903, in this state represent a loss of 94,960,000 dollars. These figures seem appalling and yet millions upon millions can properly be added to this sum, in loss of wages, expense of the care of the sick and many other charges incidental to the management of these epidemics of infectious diseases." The Commissioner shows that there was vast opportunity and abundant authority to meet conditions, but absurdly insufficient appropriations with which to perform the necessary work, for which he believes $1,000,000.00 a year could be used with immense advantage to the people of the state. We know that the most common source from which typhoid fever is derived is from polluted drinking water, the second from contaminated food. It is only necessary to call attention to this scourge as accentuated by its recent prevalence at Ithaca, New York, Butler, Pa., and still closer to the present at Waterloo and other

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points in our own state, where in every instance it has been demonstrated, the distribution was through the public water supply. A few weeks ago the Associated Press reported that fifty cases of typhoid fever in Muscatine were traced to one milk man, in whose family there was a single case, this report was probably exaggerated, but there was likely some foundation in fact for the statement. The Health Commissioner of New York in the same report referred to above, says, "As the most conspicuous feature of the sanitary condition of the state during 1903, is the typhoid epidemic at Ithaca, where, with a population of 13,000, there were more than 500 cases reported and fifty deaths." In this instance, says the commissioner, the distribution of the fever cases indicated the water supply, as the principal purveyor of the disease. Is it not startling that with all the progress of civilization, with all our wealth and increasing ability to provide necessities and comforts of life, typhoid fever is becoming every year more prevalent? It is justly considered a great and brilliant achievement when the source of such a calamity is discovered. Science steps in and stamps it out, but my brethren, how vastly greater the beneficence that foresees the danger and prevents the occurrence of these mysterious dispensations of Providence? Why do these calamities occur? We of the profession know they can be prevented. They occur because citizens are in ignorance of their rights, they are apathetic, yet the intelligence of the citizens of our state is our much vaunted boast. A strange feature regarding this apathy is the fact that there *are* a few diseases, about which it does not exist, for instance, Asiatic Cholera and Yellow Fever. If perchance a solitary case of either were to appear in Iowa, the people would arise in their might and demand its extinction, regardless of expense. And yet the same citizens view with perfect equanimity the ravages of tuberculosis in destroying the lives of 160,000 in the United States last year. What I have said about tuberculosis and typhoid fever may be said about *every* infectious disease, they can be prevented. Cholera by eternal vigilance, and at great expense is kept beyond our borders. Yellow fever has been conquered by an American doctor, and that in its native habitat, Havana, probably the unhealthiest of American cities has been made among the healthiest by that same American doctor. The first has been accomplished because backed by public sentiment, the second because backed by military authority.

Protection in our homes, and in the possession of the fruits of our labor and from the predatory incursion of an armed foe is the conceded right of every one within our borders, but greater far is the right of protection against the insidious inva-

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sion of those invisible foes, the germs of disease, that come as an assassin in ambush and strike down the dear ones of the household. Some of the rights there, of which the people of Iowa are deprived, and to which they are entitled may be mentioned. 1. They are entitled to protection from the Great White Plague, tuberculosis, and also to the best possible means to cure those afflicted, by the establishment, and proper maintenance of adequate Sanitoria. 2. They are entitled to pure uncontaminated drinking water, no right is perhaps more disregarded than this and by the individual citizen himself, but, as a rule, through ignorance or carelessness. If all our sources of water supply could be preserved from contamination, how soon we would be rid of typhoid fever, and in fact many other water borne diseases that invade our households. Water is an absolute necessity to man and to the dumb beasts as well whose rights in this respect are paramount with the human race. I can conceive of no more cruel proceeding than the forcing of domestic animals to drink from the dirty stinking ponds in so many instances provided and I am surprised that the Societies for the prevention of cruelty to animals have not long since taken the matter up. Again I believe that dairy cows forced to drink this water cannot remain healthy, and consequently give unhealthy milk, that is a frequent cause of sickness, particularly in children. I wonder if we physicians are zealous enough in our insistence that the dejecta of our typhoid cases be thoroughly disinfected before being thrown into the closet, or covered with earth. Our sources of water supply cannot be too zealously guarded against contamination, the day is almost here when sewerage must be disposed of in some other way than in running streams. Morally, I believe my own city has no more right to carry its sewerage into the Mississippi River, than I have to drain my closet and bath room into my neighbor's cistern. 3. The citizens of Iowa are entitled to pure food in the broadest sense. Iowa produces the very best and the best is none too good for her people, but unfortunately diseased cattle and hogs are daily butchered and sold to her people. Milk from tuberculosis cows is fed to our helpless children. Ignorance certainly can only excuse this condition of affairs.

But how are we to bring our people into their heritage, the possession of these rights that make so much for happiness? By education. By the creation of public sentiment. Some of our enthusiastic brethren think the result is attained by legislation alone. Legislation is a very necessary means to the protection of our rights, but it is only effective when it is in accord with, and a resultant of public sentiment. You cannot legislate the saloon out of a community that desires its presence; fortunate

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it is also you cannot legislate the saloon into a community that won't have it. Public sentiment which is the resultant of education is never satisfied short of the accomplishment of its purpose, and legislation under such circumstances always carries with it means of adequate enforcement.

And now the question presses upon us, by whom is this campaign of education to be conducted? Answer. By the medical profession of the state, the members of which are abundantly equipped for the task, and whose efforts have earnestly been expended for the good of the people rather than their own selfish aggrandizement. There are men in this Society, yes in this room today, whose lives are as filled with self sacrifice and devotion to the best interest of their patients, as was that of Ian McLaren's beloved physician of the glen. William McClure is not dead, he is here, not alone, but several of him, and instead of taking needed rest by quietly snoozing during the eruption of this screed, he is impatiently hoping it may end, that he may get something he can take home to the betterment of his clientelle in Drumtochty.

With all the earnest educational efforts on the part of the profession, the results have not been commensurate to the labor performed, because of the lack of organization. This is the 53d annual meeting of the Iowa State Medical Society, no State has a membership of higher minded men, the quality of its scientific work has been excelled by none, yet in point of numbers, its membership has been small in comparison with the number of physicians in the state.

In 1883 the membership of the Society numbered 383, twenty years later, in 1903, it was 783, a gain in round numbers of 100 percent in twenty years. The number of physicians practicing in the state in 1903, was a little over 4,000, the ratio of membership in the Society one year ago to the number in the state was a little less than twenty percent.

For more than ten years the members have been considering ways and means for rallying the profession under the banner of the Society. They have realized that their efforts to better the conditions of our people have been weakened, yes in many instances, completely nullified by want of harmony in the ranks, and lack of organization of the profession. This has been constantly recurring in the addresses of my predecessors, for years much attention and thought has been given to this subject by officers and members.

In 1901 at the meeting of the Society held in Davenport, it was reported that a plan was being evolved in the American Medical Association, by which it was hoped the profession of the entire United States might be organized upon a uniform

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plan. Impressed with not only the feasibility, but also the desirableness of this, our Society at Davenport postponed further efforts in this direction, in order that we might be ready to act in harmony with the A. M. A. plan without delay, when presented.

There are over 100,000 physicians in the United States, less than 20,000 were organized in the membership of medical Societies. The ratio of proportion between organization and non organization is thus seen to be about the same the country over, as in Iowa, and, with the thought in view that an organization might be effected, taking the Country Society as a unit, numbering not less than 75,000, which in matters educational in the direction of creating a public sentiment for sanitary reform would simply be irresistible.

At Sioux City last year was adopted, what is known as the model constitution, a temporary Board of Councilors was elected and with the other officers authorized to proceed at once to the work of organizing the state under the new constitution, and thus continuing the relations with the American Medical Association that have always hitherto been maintained.

The Chairman of the Council, each member of the Council and particularly your Secretary have worked with that zeal and energy that certainly deserves special commendation.

The results they have achieved are embodied in the reports the Secretary, and the Chairman of the Board of Councilors will make to the House of Delegates. I might briefly state here as a matter of general information that 87 of the 99 counties of the state have been organized under the new plan, that in fifty-five counties where Societies were not in existence such organizations have been found and that the membership of this Society has reached in round numbers 1,500, or a gain in one year or over 100 percent. Radical changes in the organic law of any institution usually meet opposition. This instance has not proven an exception, in several counties, the expressions of disapproval have been somewhat emphatic, and from one county a memorial has been sent to your president for presentation to you, in which it is claimed the action of the Society at Sioux City in adopting the new constitution was not in accord with the provisional requirements of the Constitution in force at that time. This will be done, and I express the hope that it will be given the careful calm consideration its merits deserve, and that it may be settled for all time and in a way satisfactory to all.

E. E. Dorr.—I move that the President's Address be received and referred to a committee of three. Seconded and carried.

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Committee appointed, Drs. Dorr, Hornibrook and Crawford.

PRESIDENT SCROGGS.—I hold in my hand a memorial from the doctors of Dubuque as follows:

Dubuque, Iowa, May 4, 1904.

To Dr. J. A. Scroggs,
President Iowa State Medical Society,
Keokuk, Iowa.

We, the undersigned, members of the Iowa State Medical Society, respectfully represent that, at the session of said Society held in Sioux City in April, 1903, a new constitution and by-laws—known as the Sioux City Constitution—after a single reading before a small number of members was put upon its passage and said to have been adopted; that even if such action had been technically formal, it would nevertheless have been ill-advised, considering the importance of the step and the small number in attendance; that, as a matter of fact, such action was in violation of Art. XII of the Constitution by which the Society was at that time governed; that in consequence of its unconstitutionality such action was null and void and should be so declared; that even if it were the desire and purpose of the members of the Society to establish the "Sioux City Constitution," owing to its inherent defects of construction, it is impossible to organize under that instrument.

As it is possible that the foregoing, in whole or in part, may be contested, and as an orderly, equitable settlement of the matters in dispute is vital to the Society's welfare as well as a test of its loyalty to its professed republican form of government, we respectfully request that at the earliest practicable moment after the calling of the Society to order and the delivery of your address facilities be afforded for the full and free consideration of this matter and its submission to a vote of the members of the Iowa State Medical Society present.

EUGENE RICHARDS LEWIS.
H. B. GRATIOT.
ANNA ODELL.
GEORGE MINGES.
J. A. MUELLER.
N. J. A. MUELLER.
B. MICHEL, M. D.
WILLIAM A. SLATTERY.
NANCY M. HILL.
JNO. S. LEWIS.
J. R. GUTHRIE.
JOHN C. HANCOCK.
J. S. BIGELOW.
C. H. HAMILTON.
LILY KINNIER.
FRANKLIN REYNER.
JOHN V. KEOGH.
J. F. MCCARTHY.
J. H. GREENE.

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PRESIDENT SCROGGS.—What will you do with the memorial?

D. C. BROCKMAN, Ottumwa.—I move, Mr. President, that this memorial be referred to a committee of five, without discussion, the committee to be appointed by the chair and to report tomorrow afternoon, May 20th, 1904, the first thing after adjournment, at the general session.

M. G. SLOAN, Dexter.—I move that we amend this motion by substituting that this matter be referred to the House of Delegates for their consideration.

PRESIDENT SCROGGS.—The chair will be compelled to rule the substitute out of order. This matter determines the very existence of the House of Delegates and hence it is improper for them to pass upon it. This is purely a question for settlement among the members of this Society.

Original motion seconded and carried.

The President thereupon appointed upon the committee contemplated in the motion: D. C. Brockman, G. R. Skinner, A. M. Pond, G. G. Cottam and G. F. Jenkins.

G. F. JENKINS.—I now move that we proceed to the regular order of business and take up the papers and their discussion in order. Seconded and carried.

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PRACTICE OF MEDICINE

CHAIRMAN'S REPORT, F. W. POWERS, WATERLOO, IOWA

Infection, Immunity and Resistance

Infection, immunity and resistance are life subjects of living organism, worthy of fruitful study, patient investigation and original research. The ends attained have been sufficiently remunerative to warrant further thoughtful consideration and careful research, for many of the vital processes and phenomena are still unsolved yet of great concern. For many centuries the infectious nature of disease has been admitted. Some were supposed to have a chemical, volatile or fixed principle that could be transmitted through air from one individual to another. Other diseases were thought to be transmitted through the medium of a fixed virus which would multiply and develop in the organism. Sydenham and Cullen believed that contagion was transmitted through vapors arising from the body. Vaccination gave proof, however, that all contagions were not volatile but some had a fixed virus. Hildebrand in 1811 speaks of the miasm of typhus fever spreading and multiplying like germs of living beings. About this time J. Hamean on discovering the transmissibility of glanders argues that virulent matters possess a life principle since they act like parasitic insects, and certain viri are antagonistic to each other, and that reaction of the organism to such viri prevented future attacks. His thought seems to harmonize with the modern thought of acquired immunity. In 1850 Royer offered for consideration his findings in anthrax, setting forth the minute bodies found in blood and tissues. About this time Budd asserted that cholera was transmitted by germs and in 1870 declared that living organisms represent specific cause of contagious disease. Trousseau expressed similar faith, and M. Pasteur demonstrated the fact in his research on silk worm disease. Koch, in 1876, demonstrated the existence of anthrax spores and later isolated the tubercular bacillus and promulgated his doctrine of the germ theory of diseases in "Koch's Postulates." In spite of the great achievement and original research of Pasteur, Koch, Devaine and others the erroneous doctrine of spontaneous

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generation of Aristotle continued, in a measure, to hold sway and the profession was slow in accepting the bacteriological origin of disease until about 1880, when the barriers of opposition and walls of prejudice began to melt before the burning truth demonstrated by the microscopical lense and culture tube. Now it is the orthodox faith, and the role of these vegetable, parasitic and animal organisms are legion, opening a vast undeveloped field. The gate is but ajar and a vast expanse waits the explorer.

Bacteriology is the hand-maid to pathology, and the students of bacteriological research have ever had eminent collaborators in the pathological field. It has remained many times for the bacteriologist to demonstrate that which the pathologist already knew. In a general way, the parasitic origin of disease has revolutionized the etiology of infectious diseases and should also change our thought in many ways as rational therapeutists, should we desire to harmonize our prescription with the pathological conditions.

Infectious organisms are classified as saprophytes and parasites. Most of the parasites are pathogenic. There is no doubt that saprophytes sometimes become pathogenic and some pathogenic bacteria assume saprophytic life. All have varying degrees of pathogenic potency. Some bacteriologists give the organisms a biological classification, and some simply classify according to their specific or non-specific activity. These different classifications express the divergent opinions, of our bacteriological scientists of the relation in common of the several micro-organisms. The difficulty in the reproduction of a particular infectious disease, through the inoculation of lower animals, is the sum total of the variations in the virulence of the culture and the varying resistance of the individual animals of like size and exact physiological and anatomical being. It is almost impossible to obtain uniform culture of known and uniform pathogenic potency. The several colonies of a given culture are not all endowed with the same exact biological action or functional activity. As the physiological functional activity of the higher organisms is not uniform and the secretions and excretions of the body are of different constancy, so it is in the lower organisms. The physiological functional activity or synthesis of the vital protoplasm of a micro-organism will determine the quality and quantity of their normal physiological product—a toxine. The chemical composition of a toxic base is quite analogous to the alkaloids of plant life but more complex and unstable. They accordingly under chemical analysis decompose readily and change abruptly from one chemical symbol to another, so that a determination of the chemical

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formula of the primary body is very uncertain. Through this research work different investigators have coined new terms for the primary body, seemingly expressive of their findings, viz: Tox-albumins, nucleo-albumins, tox-albumoses, and tox-opeptones. Toxines, which at least may be called a proteid substance, and the ferments have many common characteristics such as being changed or altered by heat and light, both being very unstable, and that a small amount may produce pronounced reaction. If, as Buchner has stated, "a ferment is a semi-living matter," then a toxine must be a "living" ptomaine.

The reaction to micro-organisms or their toxines is the expression of disease, in the production of symptoms commonly found in the animal when infected with a particular bacteria or toxine. The reaction may be local, constitutional or upon some selective organ. When there is a general reactionary manifestation there is always more or less cellular degeneration and visceral alteration produced by the poison elaborated in the organism under the stimulus of the pathogenic bacteria as a direct result of their toxines. These may be aided by associate deleterious products, the result of intestinal putrefaction and disassimilation or sudorific, pulmonic or nephritic incompetency. We know of no better illustration of the part the associate conditions may play in the role of disease than that "typhoid condition" which may supervene in pneumonia. In severe infections in general the intestinal microbes become exalted and assume a virulent condition. It matters not whether the infection is pneumonic, enteric, variola, scarletina or diphtheritic, similar abnormal and intestinal changes are found, save in enteric which seems to have a more selective action on Pyer's patches.

Again the organisms of infection may be of such a virulence and their toxines of so high a potency, that tissue will not react in normal way to the invasion and dissolution may be produced in a few hours. This was illustrated in three cases of scarlatina in my home city a short time since, in which all died within thirty-six hours from the invasion. And from this original infection three more succumbed, one an adult, in all six deaths out of seven cases. Yea, verily, another illustration of exalted virulence I saw this winter in pneumonia, in which two young adults died the same day, in the same home, a few hours apart; in one with a temperature of 101, pulse 160, respiration 60, profound cyanosis, in whom we found all the clinical physiognomy of pneumonia save temperature which never exceeded 101 1-2; the other had regular pneumonic temperature. Both had symptoms common to septicemia and died from septicopneumonia.

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Again I saw this winter a suppurative parotitis following severe pneumonia. The parotid gland suppurated, sloughed and discharged for weeks. Large masses of necrotic tissue came out, the patient also suffered from a secondary acute nephritis with albumen and casts, but finally recovered.

Finally I had under my observation an appendicitis and operated twenty-four hours after initial symptoms. Appendix edematous congested, indurated and foreign body. Thirty-six hours after operation it dawned upon me that my patient, a young man of twenty-four years, was having typhoid. He had previous to this illness, two attacks of acute indigestion, two and three years ago. We believe his appendicitis was not alone due to foreign body but rather to the exalted endowment of the colon and typhoid bacilli producing congestion of mucous lining with oedema, occluding the opening into the intestine preventing the escape of gases, causing appendicitis. He made a good recovery with no unusual symptoms. We believe then this to be true: When common bacteria become exalted or there are auxiliary microbic agents or associates, or the infective organisms are endowed with unusual virulence, one of three conditions will probably ensue:

1st. The condition will assume a grave aspect expressed in septicemia with or without localization and may prove rapidly fatal.

2nd. The septicemia may become localized in some organ or viscus and furnish the most morbid condition or profound sapremia.

3rd. The germs and their toxines may be destroyed and give rise to no appreciable symptoms.

IMMUNITY AND RESISTANCE.

But why do we sometimes find no appreciable symptoms? This depends, first, on the kind, quality and quantity of the infection; second, on immunity or tissue resistance. In fact, immunity is resistance of the organism to infection due to many conditions. Immunity may be natural or acquired, active or passive, individual or racial, absolute or relative. An individual may be immune to a specific microbe and not to its toxines, that is the cells and serums of the organism may be anti-infectious and not anti-toxic. The reverse order is sometimes found, that is, an individual supersusceptibility to bacteria or toxines. This explains a severe illness in one member of the family while other members suffering from same infection, with like virulence, show no unusual symptoms. It has already been stated that the complexity and unstability of the toxine molecule

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prevent exactness in chemical research. This is equally true with anti-toxic bodies. While the word immunity is fairly expressive, yet it is quite ambiguous since it comprises so many reactive equations and final processes, still subjudice. Experimental research, however, along the line of immunity has given us some truths worthy of note, among which may be mentioned that the blood is of itself both anti-toxic and germicidal. The germicidal properties vary with the receptivity of the animal, increasing when the animal is strengthened and vice versa. Besides being germicidal and anti-toxic it is also in some infections agglutinating. This agglutinating power of the blood has been used as a diagnostic aid by Widal in the reaction of the blood to typhoid bacteria.

"The agglutinating reaction is specific since the blood reacts only against the elements that the animal reacts." Until recently all our typhoids apparently did not react to Widal. It has since been found that cases simulating typhoid which did not react to Widal are not true typhoid, but rather paratyphoid due to a specific micro-organism. Roger states "that as a rule the better an individual resists a disease, the earlier the agglutinating power appears and the more energetic is its action." The blood may lose its agglutinating power and still be germicidal and vice versa. There appears to be no particular relation between the two. While cultures grown on serum from a refractory animal shows the same numerical development yet there is a very great difference in their pathogenic potency. This then is an attenuated virulence. It has been demonstrated again and again, that in an individual suffering from septicaemia that the streptococci had lost their virulence yet the patient died from profound toxaemia. The tissues and serums had elaborated sufficient germicidal product to destroy the infectious nature of the strepococci but too latent, and sufficient toxine had already been produced to cause death. Many old, cold abscesses will become sterile, some absorbing and going on to caseation. Again, the virus of rabies and vaccinia lose their potency in contact with serum of refractory animals. Another important element in the equation of resistance is the anti-toxic property of the serum brought forth by Behring in his diphtheritic research which opened a new field for the aputists. While the practical operation of diphtheritic anti-toxine cannot be denied, equal praise cannot be given many other of the anti-toxic blood serums, viz., anti-streptococcus, anti-tubercular, pneumo-coccus, cholera and typhoid. More promising, however, is the anti-tetanic serum.

The action of the anti-toxin serums is hardly considered a chemical antagonist but rather as a cellular stimulant increasing

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resistance of the cells to the action of the poison or prohibiting cellular penetration of the toxine bodies in toto. The secretions and excretions of the human body are altered through the presence and action of toxines. Ehrlich and others have demonstrated the immunizing power of milk from animals vaccinated against a specific disease although it is less active than the blood serum. Sclavo has demonstrated the presence of diphtheritic anti-toxine in the white of an egg from a hen vaccinated with diphtheritic toxine. Thus we see new fields open to therapeutists which may threaten to supplant serum therapy, the practical application of which we doubt. In discussing the proposition of resistance we must not overlook the importance of leucocytes. Metchinkoff and his followers contend that the leucocytes are the sole producers of the germicidal substance of the various fluids. The only contention among his devotees is whether elaboration is through the destruction of the leucocytes or is secreted by them. That is whether phagocytosis is really extra or intra cellular digestion. That phagocytosis has much to do with the process of resistance and immunity cannot be gainsaid. Should the microbe invader find tissue immunity, the interstitial fluids are germicidal and destroy some and inhibit other micro-organisms ready for elimination by the leucocytes. Besides resistance offered by blood, serums, leucocytes and cellular activity, further barriers to microbe extension are found in different parts of the body. For example, bacteria passing from the intestines will encounter lymphatic structures, chyliferous vessels, messenteric ganglia, liver, etc. Should they pass through the intestinal wall they will be opposed by those great filters the peritoneum and the great omentum. Other parts of the body are quite as well protected by lymphatic glands, etc., yet all cells and tissues are not equally resistive to specific micro-organisms or their toxines. Through this "locor minoris" certain micro-organisms or their toxines appear to have a selective action for special tissue that furnish the least resistance to their virulence and thus localized reactions are developed, viz., pneumonia, typhoid, diphtheria, cerebro spinal meningitis, tetanus, etc. The kidney corresponds to the filter plant of a city water system, eliminating toxic agents. As would be expected it is one of the first organs to suffer from general toxiemia or auto intoxication, breaking up as it does the complex molecules of dissimilation of perverted metabolism precipitating hyperaemia or degenerative kidney changes with associating atheroma, miocardial degeneration, or in milder periodical intoxication lithaemia and allied troubles.

Reactionary inflammation is another friendly conservator of vital resistance through elevation of temperature. Phagocy-

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tosis, serus exudates, false membranes, pneumonic exudates and fibrin deposits and Ehrlich's side chain theory are all immunity adjuvants which are worthy of lengthy consideration but the limits of this report precludes a further discussion.

In closing I wish to acknowledge obligation of assistance from many authors, including Roger, Stengel, American Text Book of Pathology, Journal American Medical Association and others.

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ACTINOMYCOSIS—DIAGNOSIS AND TREATMENT

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It is merely from a sense of duty, and not from a sense of knowledge, that I attempt to write up such a broad, deep, and extensive subject, as that of actinomycosis; a disease of which our knowledge is merely in its infancy; a subject which has been largely shunned, a disease which has been very commonly overlooked, frequently misnamed, and still worse, very wrongfully treated. Until quite recently, but little was known of its pathology, and still less of its treatment. It was brought to light through the channels of veterinary science, by a study of the disease in the bovine family, in which it is very prevalent. In 1877 Bollinger of Europe, to whom we are largely indebted for what little we know about the disease, studied the disease in the bovine, named it actinomycosis bovis, and gave it the first description. In 1885 Isreal discovered the fungus in man, and considered it identical with Bollinger's actinomycosis bovis. A little later Ponfick, Johne and others were heard from on the subject, but none of them seemed to understand the disease as we do today, as it was called by various names, as each investigator seemed to view the subject differently. By some it was known as osteo-sarcoma, from the character of the bone affected; others scrofula, from the way it affected the glands; others cancer, or sarcoma, from the character of the embryonic cells present; others osteo-porosis, from the honeycombed condition of the bone affected. Each author seemed to want to give the disease a name the most suitable and appropriate to the conditions they found to exist in the individual cases of the disease they studied, and as it appeared in various forms and stages, and affected the different tissues they got a variety of ideas.

Councilman, Wright, Strumple, Senn, Thompson, Eichorst, and many other most excellent and able modern authors on practice and surgery, tell us very little about the disease, as a thorough study of it has never been made, owing to its infrequent occurrence in man, and the universal habit of failing to properly study the few cases that have been observed. Hence, if we attempt to read up the subject, we are left in the dark to

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delve it out the best we can, as there is so small amount of literature on the subject.

The disease may be found in any of the warm blooded animals. It is by far the most prevalent in the bovine tribe, in which it was first studied; second, in the sheep; third, in the swine; and fourth in the equine family. It is also quite common in the wild rabbit. Within the last six years I have treated seven cases, in which I was positive of my diagnosis, as well as others with only a probable diagnosis, not verified microscopically. I am confident it is much more prevalent in the human family than is generally supposed, as many of the cases, I am satisfied, are never diagnosed.

Topography: In the bovine it usually affects the lower jaw, the submaxillary region, the side of the neck, the tongue, the throat, the oral cavity, the scrotum after castration, the mammary gland, and the feet and legs. In the sheep about the same as in the bovine. In the swine, the mammary gland, the throat, the tongue, the submaxillary region, and the scrotum after castration. In the equine, the scrotum, or on the ends of the cords after castration, the inferior maxillary, and less frequently than in the bovine and other animals, the submaxillary region. In man its favorite seat is the submaxillary region, the throat and adjacent tissue. But it may affect any tissue in the body, of either man or the lower animals. You will notice by the topography that its favorite seat is the glandular region, and especially the submaxillary region, probably due to the fact that the mouth is the common avenue of infection. Yet it never follows a chain of lymphatic glands; an adjacent lymph gland may not be involved at all.

Pathology: It belongs to the infective granulomata. It is due to the ray fungus, the actinomyces, a vegetable fungus, which is included in the fission fungi, and belongs to the variety of streptothrix. It is not a hyphomycetes, as it was once thought to be. It has morphological affinities with the bacteria on one hand, and the hyphomycetes on the other, placing it between the two. It is said to occur especially on grasses, corn and beards. It gains entrance to the body, either by inhalation, by the mouth, or by direct infection, and frequently by way of a caries tooth, incurred especially in those who are in the habit of chewing blades of grass, or picking their teeth with a straw, pieces of weeds or splinters.

When artificially produced, the fungus must be imbedded in the tissue. It does not thrive well on the surface of an open wound, and especially a suppurating wound. This probably accounts for so few cases in the limbs of animals where brush wounds and wire scratches are so numerous, and its much more

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frequent occurrence in the scrotum of various animals after castration, where the opportunities for its becoming imbedded are quite favorable.

Artificially, it grows best on agar, in the absence of oxygen. The growths can be noticed in about three days, and in about six days they are about two to three m. m. in diameter, of a grayish-white color, round, with wavy margins and usually an elevated, ovoid nodule in the center. In bouillon, growths may be obtained in the presence of oxygen. Granules planted in this medium become larger, and break up into small white masses in the course of three to five days. The growths then appear as a whitish-gray sediment in the bottom of the tube, composed of opaque, whitish, irregular granules, less than one m. m. in diameter.

The inoculations were made by picking out a few of the sulphur like granules, and, after washing them on filter paper with sterilized water, the granules were examined with the microscope to be certain that a perfect ray fungus was obtained, then it was crushed, until the fungus was thoroughly broken up, and with these the inoculations were made on the agar, at a number of points. Thus we think we have inoculated with the mycelium, instead of the entire ray fungus. On about the fourth or fifth day, a careful examination with the microscope will reveal a large number of the ray fungus, rather small and round-like, usually quite uniform in size and shape. Day after day they are observed to grow larger, and in a few days become irregular in size and shape, as if growing out on one side and dropping off on the other. And in a short time we again notice the small, round ray fungus, giving at this time the actinomyces in all its stages, from single filaments, and clusters of filaments, to the entire typical ray fungus. All this is convincive that we are dealing with a living being, which reproduces by a complete breaking up, or separation, into its several filaments, and that each filament may produce a new being. I am confident that the distal, bulbus end of the filaments are the true mycelium, and from the growth of these the new ray fungus is formed. When artificially grown, the stellate or ray form is not so well marked; the filaments grow much longer, often forming large masses of long, crooked, thread-like clusters of the filaments, much resembling the hyphomycetes.

It is said by some to be a combination of abscess formation and new growth of connective tissue. But this I consider a mistake; for primarily, it is a process of homogenic new growth of tissue, accompanied with a degenerative process, and not a suppurative process, except when there is a mixed infection to begin with, which seldom occurs, but may occur, as in an

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ordinary abscess, and which is very apt to occur, when artificially produced with the purulent discharge from an actinomycotic fistula, the method used by some in studying the disease, who think it is a suppurative process. I have never been able to find the pyogenic germ present in the early stage of the disease, hence no pus. The actinomycotic tumor usually, sooner or later, assumes the general appearance of a common abscess, therefore, for the want of a better name, we call it an actinomycotic abscess, and the contents actinomycotic pus, yet it is not pus in the truest sense. There is always more or less of a tumor-like enlargement, the result of the irritation, or low form of inflammation set up by the fungus. The tumors are often more or less nodular, and occasionly multiple, and in the center of each nodule the process of degeneration is going on, constituting, as a whole, a collection of small pockets, each filled with the actinomycotic pus, and these may, and usually do sooner or later, as they grow larger, break into each other, forming one or more larger pockets, and these finally wend their way to the surface, setting up a discharge, forming the characteristic actinomycotic fistula. At this time, and seldom, if ever, any sooner, is when mixed infection takes place, and the discharge assumes the purulent form. This actinomycotic pus has certain peculiarities characteristic of itself only. On opening one of these tumors in the early stage of the disease, after the formation of the cavities, you will at once observe what you never do on opening an ordinary abscess. Instead of the ordinary purulent appearance, so well knyown to every physician, you will find a thick, semi-liquid, tenacious, stringy-like mass, in apparance, more to be compared to the white of an egg than anything else. This is characteristic of actinomycosis, no difference where the lesions are, but it is more marked when in a glandular region, such as the submaxillary region. Suspended in this so-called pus, are found, minute, round, yellow, sulphur-like bodies,or granules, as they should more properly be called, about one m. m. in diameter, usually visible to the naked eye. In the earlier stage these granules contain the fungus. Later they may become cheesy, or calcified. It is very common to find them calcified. These granules are best seen by placing a thin layer of the mass on a glass plate with a black background. To look for the fungus, place one or more of these granules on the slide, the coverglass over it, and press on the coverglass very gently. If you press too hard the fungus will be broken up, and instead of observing the fungus in its stellate, or ray form, simply a mass of disorganized filaments will be seen, and this may lead one to think the fungus is not present, as the inexperienced may not recognize the filaments. Press on the coverglass just

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hard enough to break the granule, and you will often be able to observe the ray fungus in all its beauty. The fungus may be stained with any of the ordinary dyes, though it does not take the stains very readily. Owing to its large size, it is easily seen unstained, with the low power, 1-6 or 1-8 objective, but to study the filaments requires the oil immersion objective. Haemotoxylin is probably the best stain for staining the fungus in tissue, with eosin for a counter stain. This stains the filaments blue, and the central core of the fungus an orange yellow. The fungus is much more numerous in the granules from the lesions in the lower animals, especially the bovine, than those from man. This makes the diagnosis in man sometimes quite difficult, and probably the cause of a wrong diagnosis in many cases, even when one is on the lookout for the fungus. As the fungus grows older, the center becomes more dense, and finally degenerates, and the fungus is broken up, leaving the filaments suspended in the contents of the cavity. In studying a section of the tumor, the fungus is seen sometimes very small, and appears to be simply imbedded in the tissue, and others inclosed in a granule, and in others the granule may be suspended in a fluid filling a small cavity, or cavities of various sizes, the larger cavity always in the center of the nodule.

All this may be seen in a single section of the tumor, each of these cavities seemingly representing the seat of infection, and the various stages of development. Each of these cavities is encircled by a granulation tissue, so much resembling sarcomatous tissue, that many have been diagnosed sarcoma. But it contains much more intercellular tissue than sarcoma, and is much firmer. This granulation tissue is surrounded by a very dense, firm, fibrous connective tissue, making it a very firm tumor. Instead of requiring the entire ray fungus to produce the disease, a single mycelium may gain entrance to the body, and lodge in a suitable place for its development, and thus produce the disease. The ray fungus forms at the primary seat of infection, the mycelium are shed, and carried to adjacent tissue to set up a new lesion. The disease does not seem to be metastatic, owing to the large size of the fungus, as the new lesions always form very near the primary seat of infection. Hence we have the several centers of infections in their various stages of development, and the above named pockets, all in the small area of one small nodule of the tumor. When the bone is affected, it becomes enlarged, and porous, and an abundant formation of osteophites, giving it the appearance of an osteosarcoma after maceration. In man the bone is very seldom involved.

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Symptoms: The temperature, appetite, digestion, assimilation, and the emunctories are all in perfect normal condition, even in advanced cases. The first thing to be observed is a small, ovid nodule, very firm, sometimes movable, tumor-like in appearance, very little or no pain, no inflammation, or discoloration. It is very slow in development, and usually excites but little or no alarm at first. As it grows larger it becomes adherent to the adjacent bone, and becomes so firm as to lead one to think it is actually an osteoma, yet the adjacent bone is not affected at all. Later, it becomes tender to the touch, slightly discolored, and sometimes a very low form of inflammation.

As the cavities grow larger and wend their way to the surface, fluctuation may be noticed, and you may think you have a simple abscess. On opening it you will find the above described, semi-liquid discharge, so characteristic of actinomycosis. The lesions being usually quite deep seated, and the process very slow, it requires from one to two months to reach this stage, and sometimes much longer. Not until the contents of the cavity can be obtained, can a positive diagnosis always be made. When the disease has reached the advanced stage, before the patient is seen by the doctor, the tumor should be incised at once, (if it is a suspicious case), so as to be able to make a positive diagnosis. Many times the knife will reach a cavity in these cases, when there is no fluctuation at all present, owing to its deep seat, and the extreme firmness of the tumor.

Treatment: I find the text books of today tell us actinomycosis is a malignant disease. Of the twenty-one books in my library which discuss the subject, thirteen give no treatment at all; five tell us surgery is the only remedy; two simply suggest a trial of potassium iodide; one gave electrolysis a trial, and denounced that as a failure. One of the best articles ever written on the subject, was by the celebrated surgeon, Dr. J. L. Sawyer, of Centerville, Iowa, who says he used a one per cent. solution of the iodide of potassium, injected subcutaneously which is very good and effective, but has its objections, and serious objections, too.

In an experimental study of the disease in the lower animals, in which the iodide of potassium was employed for the treatment, both the hypodermic and oral methods were employed, and both gave good results, but the oral method was much more satisfactory than the hypodermic. Those treated hypodermically did not recover as rapidly, did not take on flesh as fast, the injection was followed by a great deal of swelling, suffering and general disturbance, which sometimes lasted for

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several hours, and there was a tendency for the swelling to remain in part, which really seemed to be a hypertrophied condition, thought to be due to the irritation of the iodide of potassium. While those treated orally recovered much sooner, took on flesh much more rapidly, much less tendency to idoism, and best of all, not one vestige of the tumor remained. We have been taught by good authority, that in all suspicious cases where a positive diagnosis cannot be made, give potassium iodide, and if there is improvement in a short time, you have a case of siphylis. But this I consider a mistake; for we certainly have in potassium iodide a specific for actinomycosis as well as a remedy for siphylis. My method of treating these cases is quite simple. When I have a suspected case of actinomycosis, and can only make a probable diagnosis by exclusion, I put the patient on potassium iodide, and as soon as the conditions will admit, and the patient will submit, the tumor is incised, laying it wide open, and a careful microscopic examination made of the most suitable material that can be obtained, whether it be from a cavity, or the interior of the tumor. Then a positive diagnosis can be made, and no time lost in the treatment given, whether it proves to be a case of actinomycosis or not. In many cases, when the potassium iodide has been given in the early stage of the disease, you will never be able to open an abscess, for they will not form, and if they have formed, they will very rapidly recede. If there are any cavities or fistulous tracks, they are cleansed daily with hydrogen peroxide, and a simple protective dressing applied. The only medicinal treatment is the iodide of potassium, given, either with the ordinary trifolium compounds, or syrup of sarsaparilla, or alternately. Begin with about thirty grains per day, and increase to sixty grains per day within a few days, unless iodism appears, which there is but little danger of, but if it does, either withdraw the iodide for a few days, or decrease the quantity given to just what the patient can take without causing a disturbance.

The average patient will take a dram per day with perfect immunity. I have never given more than a dram per day. In cases of long standing the iodide should be given for at least a month after the patient has all the appearance of being entirely well, and in some cases much longer. The very worst cases will get well under this line of treatment, in from three to four months, and many in much less time.

REPORT OF CASES.

Case I. J. R. Male, age 18, the son of a farmer, family history negative. Called at my office Jan. 10, 1899, complaining

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of an enlargement on the left side of the neck and lower jaw, which was first noticed the latter part of Nov., 1898. No history of injury, never had the toothache, there was no discoloration, no pain, until with the last few days, when he began to complain of tenderness to the touch. The enlargement was so firm and hard that it was thought, by many who saw it, to be an enlargement of the bone. After some persuasion, I was permitted to use the knife. At the depth of about an inch and a quarter, the knife entered a small cavity, and to the amazement of all present, I liberated about half a dram of the so-called actinomycotic pus. I was not long in demonstrating the presence of the ray fungus, and the following day made known my diagnosis, and the boy was put on treatment. He was given thirty grains of potassium iodide per day in syrup of trifolium compound, and increased to sixty grains per day within a few days. The patient improved rapidly from the first, and made an uneventful recovery, and was discharged as cured March 29, 1899. The incision closed at once, and was not dressed the second time. Over five years have elapsed, and no sign of the disease returning. He is now a married man, and has a son over two years old, who is as hardy as any boy.

Case II. J. M., male, age 22, general physique good, family history negative. First saw the patient May 25, 1900. He presented nothing except an enlargement in the left submaxillary region, extending from the angle of the jaw to the point of the chin, measuring three and one-half by two inches. The neck was not involved. This was of five weeks duration, and had been poulticed for a week. It was very firm, except a very small area about the center, which was quite soft, and fluctuation present, but not well marked. There was no pain at all except on pressure. The tumor was incised, and a diagnosis of actinomycosis was made at once. The patient was given forty grains of the iodide of potassium per day, in trifolium compound, and syrup of sarsaparilla alternately. The incision was cleansed only three times, with hydrogen peroxide, and soon healed. He made an uneventful recovery, and was discharged Nov. 30, 1900.

Case III. E. J., female, age 19, single, a farmer's daughter, general health good, family history negative. I first saw the patient June 16, 1902, and found her suffering with what I diagnosed an abscess of the right mammary gland, which she said was of three weeks duration. It had been allowed to rupture three times spontaneously, at three different points, leaving two small openings, and one large opening with a free discharge of pus. The gland was enlarged to ten inches in diameter, movable, nodular, the left portion quite firm, the

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right portion quite soft and boggy, and giving the appearance of a sponge saturated with pus, being able to squeeze pus out of that portion of the gland in large quantities. I simply gave it a general cleaning up, and repeated it several times, with but little or no improvement. At last my anger was raised, my suspicion aroused, and I set to work to study the discharge from the rotten gland, that I might know what I was dealing with. I seemed to be able to find almost everything and anything, pus, milk, bacilis, micrococus, etc., but nothing special, until to my surprise, I found the ray fungus. She was at once given potassium iodide, one dram per day, in trifolium compound. The gland was cleansed daily with a solution of bichloride of mercury, and hydrogen peroxide, for eight days. She soon began to improve, and made an uneventful recovery, and was discharged Sept. 21, 1902, with the gland seemingly in a perfectly normal condition. I am unable to account for the actinomycotic infection in this case, unless it was secondary, for, about two weeks prior to my being called to see her, the gland was allowed to remain uncovered, and the flies were brushed away from it during the day with twigs of weeds or branches of a tree, and she was kept in a very unclean bed.

Case IV. J. B., male, age 9, the son of a farmer, family history negative, general health good, and had been from his infancy. I first saw the patient Nov. 15, 1902. Examination revealed nothing but a small nodule in the right submaxillary region, just below the inferior maxillary bone, which was quite firm, not adherent to the bone, no pain, no inflammation, no discoloration. Being a little uncertain in this case, as it was of short duration, (about two weeks), and as I wanted to make a positive diagnosis, I ordered hot poultices for a few days. The nodule then grew much faster, and Nov. 20, I incised it, and found a few small cavities, and a diagnosis of actinomycosis was soon made. The patient was given thirty grains of the iodide of potassium daily in the syrup of trifolium compound as usual. The incision received the usual hydrogen peroxide dressing. The patient made a rapid and uneventful recovery, and was discharged Jan. 3, 1903.

Case V. F. H., female, age 11, living in town, was of very filthy habits, spent much of her time in the summer playing on a very filthy, weedy lot. General health very poor, and had been for over a year. Father, mother, and one sister died of tuberculosis. I first saw the patient March 31, 1902, and found her very cachectic, badly emaciated, rather severe cough, profuse expectoration, chest expansion only fair, percussion negative, auscultation showed mucus rales in upper portion of the right lung, temperature 102, appetite very poor, profuse night sweats,

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bowels very loose, and passing particles of undigested food, frequent vomiting, intense thirst, examination of sputum and urine negative. April 4 I discovered in the right epigastric region, a tumor-like enlargement about three inches in diameter, very tender to the touch, quite boggy or doughy, April 5, fluctuation well marked, and temperature 103 2-5. Diagnosis, pulmonary tuberculosis, (although I was unable to find the tubercular bacillus in the sputum), with probably a tubercular abscess in the wall of the duodenum. Both operation and aspiration were refused, as the child was expected to die very soon. She was given Waterbury's codliver oil compound, and the ice bag was applied to the tumor. April 6, the swelling and pain had largely subsided, the temperature had fallen to 101, and to all appearance the patient much improved. At the time my attention was called to the dejecta, and to all appearance, there was a large quantity of a muco-purulent discharge from the bowels. In order to leave nothing undone, I set to work to study this discharge, and was again disappointed in not finding the tubercular bacillus present. April 8, the patient was much worse, the swelling in the right epigastric region returned, temperature 104 3-5, diarrhoea intense, the cough not improved. At this time I was again dumbfounded on finding a fine specimen of the ray fungus present in the dejecta. A new diagnosis was of course made. I now felt certain I had a case of actinomycosis of the walls of the duodenum. The patient was at once given potassium iodide in the syrup of sarsaparilla and buchu, beginning with fifteen grains of iodide per day, and increased it three grains per day, until she was taking forty-eight grains per day, which was continued for twenty-eight days. Then the quantity given was gradually reduced. She showed improvement in a few days, and made a rapid and uneventful recovery, and was dicharged July 7, 1902.

The pulmonary trouble, which was in part the cause of the fever, proved to be only bronchitis, and soon cleared up. In this case I attribute the source of infection to the the almost constant chewing blades of grass, and the extreme careless and filthy habits.

Case VI. R. L., male, age 49, farmer, rather careless habits, general physique good, family history negative. I first saw the patient Sept. 26, 1901, and found him affected with an enlargement on the right side of the neck and face, extending from the mastoid to the outer end of the clavicle, down and forward to the median line beneath the chin, and extending upwards as far as the eye and side of the nose. It was very firm, except a very small area about the center, which was quite soft, and fluctuation well marked. The first appearance of

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the trouble was early in the Spring, (could not give exact date). It grew very slow and caused no alarm for some time. He at last consulted a physician, who told him he had a decayed tooth, which was the cause of the trouble, and the tooth was extracted, but it proved to be a sound tooth, and of course, its removal gave no relief. The second doctor, whom he soon visited, diagnosed it an abscess, and prescribed hot poultices, which simply aggravated the trouble at this stage, hastening its growth, with no relief. The third doctor whom he soon sought, plainly said he did not know what the trouble was. He then visited the fourth doctor, who is a very eminent surgeon, and who advised an operation at once, stating that the bone was affected, and that the tumor must be layed open and the bone scraped, before he could possibly recover. He then called at my office, and with the experience I had already had with this disease, and this case in the advanced stage, I thought I recognized the trouble at first sight, and told the patient so at once. After making an incision, and evacuating the cavity, I was not long in making a positive diagnosis of actinomycosis. He was given, from the first, sixty grains of potassium iodide per day, in trifolium compound. The cavity was dressed twice a week with hydrogen peroxide for three weeks, and a simple protective dressing applied; thereafter it received but little attention. In this case there was a real actinomycotic fistula for two weeks. This patient did not improve as rapidly as he should, for he only took his medicine about two-thirds of the time. But he made an uneventful recovery, and was discharged March 5, 1902. This was an unusually bad case, on account of the long standing. In this case I attribute the source of infection to picking the teeth with a piece of weed, a piece broke off in the cheek and was never removed. So the patient stated to me. I see this gentleman frequently. He is as hardy as ever, with no signs of the disease returning.

Case VII. J. C. A., male, age 38, farmer and stock raiser, living in Northern Missouri. General physique good, had typhoid fever at the age of seventeen, and has not seen an unwell day since. I first visited the patient Nov. 30, 1903, and found him affected with an enlargement of the left inferior maxillary, extending from the point of the chin to the ear, and from the upper part of the cheek down to the side of the neck. This enlargement was first noticed about the middle of September (could not give exact date). The tumor in this case was very firm, with no indication at all whatever of a cavity in the tumor. I made a free incision and obtained a small amount of the characteristic actinomycotic pus, and soon made a positive diagnosis of actinomycosis. He was given the usual treatment,

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beginning with sixty grains of potassium iodide per day, and continued throughout the treatment. I saw this patient but three times, the last was Jan. 10, 1904, when not a trace of the tumor could be noticed.

The local dressing is a matter of cleanliness and protection only, and does not aid in any way whatever in eradicating the disease. The largest and most alarming actinomycotic tumors will simply melt away under the proper iodide treatment, without any other aid at all whatever. The advantage of giving the potassium iodide with a vegetable alterative and tonic as I do, the patient's stomach does not become deranged, the appetite continues good, and they are able to take a larger quantity of the iodide, which is very necessary, as the system should become saturated with the iodide to get good and rapid results. The patient will often increase in weight while being thus treated. When given alone, potassium iodide will soon derange the stomach, anorexia soon follows, the patient will become quite stupid and daunty, and iodism soon develops, and the patient is apt to loose flesh, thus necessitating the withdrawal of the iodide for a short time, and thus delay the treatment. When given subcutaneously, it is necessary to give it so frequently that it often becomes necessary to place the syringe in the hands of an inexperienced person, thereby putting the patient in great danger of an abscess, and the injections cause such intense pain that many patients cannot and will not endure it. And it often causes great swelling, and induces hypertrophy at the seat of injection, which has a tendency to remain permanent, which I am certain is very objectionable.

Of the seven cases I have reported, only one was living in town. One, case III, was living in a semi-timbered farm, and spent a portion of the time during the last few years, working in a hotel. The other five were all raised, and were living in timbered country, bordering on the Iowa and Missouri line, all in one locality, covering an area of territory not more than fifteen miles in length. All living the life of a real old-time backwoodsman, of the genuine old coon-hunting variety. Why this disease is so much more common in the timbered country than the high prairie land, whether it is due to the fact that the farmers living on the prairie farms are usually much more refined and use greater care and precautions in their cleanliness and care of themselves, or whether the fungus is more numerous in the timbered localities than in the prairie lands, I am not prepared to say.

E. Hornibrook.—The paper, in my judgment, is a very valuable one, suggestive and instructive. I regret that it was

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not read so that all could have heard it. It was valuable, because it embodied the modern ideas of this disease and rejected the theories of the disease which have been exploded and the one point which I want to draw attention to is this; in my experience that the disaese is not necessary a medical one, to be eradicated only by medicine. Whether or not the gentleman's theory that it is only common or rather more common in wooded countries than in prarie countries, is correct or not, I cannot say. In the prairie country where I reside, I have seen a number of cases, in their different stages. One thing which the gentleman brings out is worth all of the time spent in listening to the paper and that is the character of the discharge. A bluish swelling in any part of the body, slow in its progress, not painful, not of necessity affecting the general health, opening it and finding a discharge, not pus but somewhat similar to egg albumen, then find out whether or not the ray fungus is present.

The last two cases that I saw were diagnosed when the swelling was not larger than a bean, not treated medicinally, curetted and treated with carbolic acid, the whole bottom thoroughly scraped and treated with carbolic acid and no medicinal treatment given and recovery took place in a very short time without any secondary symptoms.

When it gets to be of large size eradication with a knife will not cure it—medical treatment is necessary. I have a case particularly in mind which was eradicated with a knife when the tumor was not larger than an ordinary plum, as the patient told me—eradicated thoroughly, the operation well done, for the surgeons were successful men, but it reproduced itself. It was then removed with a cautery and it was again reproduced. Finally, after consulting a good many it dropped into my hands and I treated the patient with iodide of potassium, as suggested in this paper, and the patient recovered entirely. The lesson to be learned from the paper is to diagnose the cases early; with a small incision and a microscopical examination you can diagnose the case before it becomes dangerous, and becomes as I was taught in my early days, and as the old authorities say, a malignant disease. It can be eradicated, if diagnosed early, without a long course of the iodide of potassium treatment. It can be cauterized. I suppose a cauterizing agent will do as well as carbolic acid but the carbolic acid has answered my purpose and I will follow it in the future when I diagnose the case early.

J. A. Replogle.—I am a little disappointed right here because I expected to hear some of the silvery haired members of the profession talking on the subject. I was glad, however, to hear what Dr. Hornibrook had to say on the subject. First,

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I want to say to my assertion that it is more plentiful in timbered countries—I did not say that it was—I say I am not able to tell whether it is or not but that five out of the seven cases I found in one locality, the patients being almost neighbors to each other. In regard to treatment; if the enlargment is not bigger than a plum or even the size of a walnut, removal is all right, but you do not know when you have got it all or not. When the treatment is with iodide of potassium patients can come every day, they need not lose a meal, they need not lose a day's work and when the disease melts away under the potassium iodide you know there is none of it left. It is gone. The worst case I had--except the little girl I spoke of—and that little girl was so emaciated that everybody thought she was going to die every day with tuberculosis—was one where the enlargement was way down on the point of the shoulder. It was almost on a level with the lobe of the ear down on to the point of the shoulder. This was one of long duration. The patient had visited several doctors. I did nothing in this case except to make an incision, examine the cavity and put the patient on iodide of potassium. He did not lose a day's work. He is living today, stout and hearty and his face as clear as any man's face can be, except the scar where I made the incision. I find that it is a prevalent opinion that the so-called "Big Jaw" or "Lumpy Jaw," is always on the jaw. That is a mistake. It is a mistake entirely. You can find it any place along the sub-maxillary region; that seems to be its favorite spot simply because the mouth seems to be the common avenue of infection and the adjacent glands seem to afford a favorite seat for the fungus to develop in. As you all know, this disease has not been properly studied. I am confident we overlook it I am satisfied I have overlooked cases before I had made a study of it as I have to the full extent of my ability. Every one of these cases I diagnosed myself. If I get on to something I do not know how to diagnose, I am going to learn. We must diagnose our cases and then the treatment is simple.

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PNEUMONIA—A CONSIDERATION OF ITS TREATMENT, BASED ON THE CONCEPTION OF ITS MORBID CHANGES

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Pneumonia has become the "Captain of the Men of Death" for it claims more victims each year than tuberculosis, and in fact, more than any other acute infectious disease. During the past year it has been especially prevalent and serious in its consequences.

Our conception of the nature of croupous pneumonia has changed with the development of knowledge regarding its etiology and pathology, and in like manner have our methods of treatment been directed more along rational lines.

Although the limitations of medical treatment is well recognized, few of us will agree with the therapeutic nihilism expressed by a prominent colleague during the past winter, that all medicine is useless in pneumonia. True, the desired specific is not yet attained, but there is purpose in what we do, since our knowledge has widened on the various morbid manifestations of the disease process with which we have to deal.

ETIOLOGY.

Croupous pneumonia is an acute infectious disease and the evidence is accumulating that it is frequently transmissible by contact.

A number of varieties of micro-organisms have been associated with croupous pneumonia, but by reason of its frequent presence, the pneumococcus or diplococcus of Fraenkel-Weichsolfaum is now regarded as the essential causative agent. This micro-organism may now be considered as the sole cause of genuine acute lobar pneumonia; of the various other microbes associated with pneumonia as Bacillus Friedlaender, Streptococcus pyogenes and the pyogenic Staphylococci, they can cause broncho-pneumonia but they are usually secondary invaders in lobar pneumonia. The pneumonia produced by the influenza bacillus, bacillus diphtheriae, and bacillus typhosus is not to be identified with true lobar pneumonia.

The pneumococcus is a regular inhabitant of the respiratory tract, and ordinarily leads a saprophytic existence only

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becoming pathogenic when a trauma, or deterioration in natural resistance permits its gaining a foothold in the tissue. Such influences as cold, traumatism, and alcohol are purely predisposing in providing an adaptable soil for the pneumococcus to thrive upon. During the disease pneumonia, the pneumococcus usually occurs almost in a pure state in the sputum, is detected in the blood in a majority of cases, and is present in the different processes complicating pneumonia.

When isolated in pure culture, it manifests but a feeble resistance to the environment of artificial cultivation and its life is limited as a rule to five or six days; when inoculated into animals, it produces a septicaemia and pneumococci are found in great numbers in the circulating blood. When the blood from an infected animal is drawn into a sterile glass tube and its ends sealed in the flame, the pneumococci will retain their life and virulence for a much longer time than upon ordinary culture media. Again, when inoculated into a successive series of animals the virulence can be increased to a remarkable degree, reaching an intensity of producing death in a rabbit within eight hours after the inoculation.

Thus from a simple saprophytic micro-organism may be evolved by appropriate surroundings a most virulent parasite. This variation in virulence is a specially noticeable feature in pneumococcic infection in man. Croupous lobar pneumonia is in reality a pneumococcus disease, and the term pneumococcic infection of the lung is in many respects a more preferable term than pneumonia.

While the primary effect of infection with the pneumococcus is a hyperaemia, fibrinous and cellular inflammation of the lung, yet the inflammatory lesions in the lungs may be the smallest part of the infective process going on in the body, and the extent of the lung involvement does not indicate the severity of the illness of the patient. It is important to bear in mind that the local lesions in the lungs are accountable for some, but by no means for all of the patient's symptoms.

A patient ill with croupous pneumonia is suffering from a general infection with the pneumococcus, and organs other than the lungs reveal changes as marked as the local pulmonary lesions; the last named lesions being not always so susceptible of recognition.

It may further be said, that the severity of the clinical manifestations depends upon the virulence of the infecting pneumococcus and the resistance offered by the patient. Thus we find that the extent of the local lesions, be they in the lungs or elsewhere, bear no necessary relation to the severity of the

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general symptoms—that these on the contrary are an expression of the toxaemia.

The greater the virulence of the pneumococcus and the less the tissues of the patient are able to neutralize the toxin, the greater the resulting toxaemia. One case will manifest little or no toxaemia, while another with the same lung involvement will present the most profound toxaemia.

Observation has taught us further that the dangers to be apprehended in pneumonia are due almost entirely to the toxaemia, and in 90 percent of the fatal cases death results from toxaemia, and not from extent of lung involvement or mechanical embarrassment of the circulation.

TREATMENT.

Regarding the disease as a pneumococcic infection with the generation of toxines in the local lesions circulation and secondary lesions, there can be but one specific therapeutic agent, and that must be an anti-toxin. A so-called anti-pneumococcus serum has been prepared and used in pneumonia but its real value is still undetermined. It was first introduced by the Klemperers and is used now in doses of 20 c. c.; the general expression as to its efficacy appears to be that it does not cut short the attack or hasten the crisis, and has no influence on the extent of the local inflammatory lesion. A slight influence for good has been attributed to it in its effect on the toxaemia, and no harmful effects have been ascribed to it. The limitation of anti-pneumococcic serum is due to several reasons: First, the pneumococcus does not produce a strong soluble toxin in culture media analogous to diphtheria and tetanus toxin, the poison being contained in the bacterial cells, from which it may be extracted after the death of the pneumococcus; second, the interesting experiments of M. Wasserman have shown that in animals immunized with the pneumococcus, the anti-bodies are contained in large amount in the lymphoid structures and bone marrow, but do not escape into the circulation in sufficient amount to make the blood serum sufficiently antagonistic to the pneumococcus when brought in contact with it in another animal body.

It is quite evident that certain specific substances antagonistic to the pneumococcus are produced in human beings infected with the pneumococcus; the crisis being explained by the formation and accumulation of these anti-bodies in the organism in sufficient amount to overcome the infection. The anti-pneumococcus serum used at present is more of an anti-bacterial rather than an anti-toxic serum. Acknowledging then that we have no specific, the treatment of pneumonia must be based en-

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tirely on the conception of the morbid process and directed toward the conditions that exist in each individual case.

In that light our therapeutic endeavors would be, (1) to arrest, limit, or modify the extent of the local inflammatory lesions in the lung, since it is evident that here the toxins are principally manufactured, (2) toward assisting nature to eliminate the toxins, and (3) toward counteracting the effect of the toxins.

To this may be added that the key to the position lies in the capability of the heart to carry on its work in its handicapped conditions, and furthermore that the method of treatment instituted whether tonic, simulating, or eliminative, should not be depressing.

There is no doubt that by controlling the local inflammatory process in the lungs, we benefit the patient very much, this applying principally to the early stages or the first days of the disease. As in all inflammatory conditions, the most rational indication is to lower the blood pressure, and the best method to control the degree of congestion in the lung is to divert the blood elsewhere in the body.

The most serviceable way to lower the blood pressure in these circumstances is by means of laxatives of which calomel and the salines are the best. By the laxative action the blood pressure is lowered, the work of the heart in consequence lessened, and the frequency of heart's action and respiration rate reduced.

Another way to control the inflammatory lesions is by means of certain local applications. We are inclined to look askance at the various poultices, and medicated plasters which were formerly used so extensively, and yet we must recognize that they were not without their virtues. It is a great question if their penetrative power was ever very great, but when they increase the activity and eliminative powers of the skin, relaxing the peripheral vessels, they certainly lighten the labors of the heart, and likewise must to a certain extent also control the congestion in the lungs.

Of special service is the local use of cold; it is also a question in just what way it exerts its benefit, whether it controls the local inflammation or not, yet it certainly promotes the well being of the patient, and greatly relieves the pain, which is commonly of pleural origin. It is of special benefit in counteracting the effects of toxaemia, each application of cold deepens the respirations and lessens or dissipates the hypostatic congestion of the lung that has developed in consequence of a little failure of the heart. The heart's action is stimulated, and in consequence of this and the improved breathing there is better oxygenation of the blood, cyanosis which has developed is lessened, and other

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manifestations of toxaemia diminished. In the later stages hot applications tend to promote resolution and in that sense are better than cold.

There is sufficient accumulated clinical and experimental evidence to show that the degree of toxaemia in an infectious disease depends upon the activity of the kidneys—that the toxins are more freely liberated by the kidneys than by the skin or the intestinal tract; in fact a diminution in renal function is always a foreboding sign in pneumonia. With a view, then to assist nature to eliminate the toxins, we endeavor to keep up the action of the kidneys. We recognize that the renal activity depends upon the strength of the heart, and this upon the tone of the nervous mechanism that controls the heart and blood vessels.

In order to promote free diuresis and eliminate the toxins, it will be necessary to keep the circulation active; for this purpose strychnia gr. 1-40 to 1-30 is particularly useful, to be given from the beginning to fortify the circulation as it were, against the deleterious effects of toxins that are sure to develop. If the urine falls below the normal physiological amount, the best renal stimulant always is large quantities of water from two to three quarts in twenty-four hours, and if mildly saline it is still better.

In the later stages the above is insufficient, when the renal secretion lessens, the vascular tension becomes reduced, and the pulse weak and dicrotic, showing that the toxaemia has increased and its pernicious effects are more manifest. Now it is that larger doses of strychnia are necessary, the cardiac stimulation to be increased, and this is also the time when hypodermoclysis is especially indicated. The introduction of normal salt solution by way of the subcutaneous tissues into the system tends to dilute the blood, favors elimination, and in that sense is a good cardiac stimulant, and above all it prevents absorption. After its use, 500 c. c. once or twice a day, the amount of urine increases, and a concurrent lessening of the frequency of the heart beat and an increase in the strength of the pulse takes place. At the same time the delirium lessens, the temperature falls a little, and the respiration becomes less frequent and deeper. Hypodermoclysis is very serviceable in all forms of toxaemias.

The failure of the circulation is always the most serious and important complication; the cardiac weakness in pneumonia being attributable to three influences: (1) increased work, (2) disturbance in the nervous mechanism, and (3) change in the muscle of the heart; all three are more or less due to the toxaemia, the last two being mainly due to the deleterious action of

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the toxin on the nucleus of the pneumogastric, and on the myocardial structure. By aiding the elimination of toxins, we naturally prevent the deleterious effect of toxaemia on the vagus and heart muscle.

In the application of so-called cardiac stimulants, there is some variance of opinion but strychnia, digitalis, strophanthus, alcohol, and nitro-glycerine usually comprise the list. An excellent rule is to use especially such remedies as can be given hypodermically in order to avoid the disturbing effect on the digestive tract.

Although strychnia is perhaps more of a respiratory stimulant, it is nevertheless the sheet anchor for cardiac stimulation in pneumonia. In reference to digitalis, I am particularly impressed by the experimental inquiry of Sir T. Lauder Brunton and Prof. Cash of Aberdeen University in which the following conclusions are submitted: "That a high temperature lessens the inhibitory power of the vagus control in the medulla to such an extent that digitalis, which acts on the centre, loses its power to a great extent to restrain the action of the heart and slow the pulse, as it would at the normal temperature and that with a very high temperature, it might have no effect at all."

From this we may conclude that digitalis and its congeners should be given with great care in febrile conditions as one may be induced by apparent inaction of drug to push it too far and thus producing too great depression of the pulse during defervescence.

The nauseating effect of digitalis is another reason why it should be avoided in pneumonia. In this regard strophantus is equally effective and a much more effective drug for the purpose.

Although the effect of nitro-glycerine acts rapidly and soon wears off, as it relaxes the peripheral tension, it lightens the work of the heart and so it really is a great benefit.

With our knowledge of the pathologic process in the lung in pneumonia, it is difficult to understand the real purpose of the different expectorant remedies that are so freely used in pneumonia. Not too strong emphasis can be laid on the danger of using opium in pneumonia, as its effect to paralyze the respiratory centre and there is a consequent increased cyanosis and collapse often resulting from its use.

Among the prominent effects of pneumococcic infection are those which refer to the gastro-intestinal tract, including principally tympany and meteorism. The death that takes place as a result of the extreme tympany is in part attributable to the interference with cardiac and respiratory action. In fact, the points to be watched about pneumonia are the heart, kidneys and the intestinal tract.

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In outlining some of the general indications for treatment of pneumonia based on the conception of the morbid process, special prognostic significance must be given to an associated bronchitis, a previously impaired myocardium, a patient already subject to renal disease, and in a lesser degree one in which chronic gastro-intestinal disturbance is present. It is these factors that play such a role in the outcome of pneumonia occuring in older people and in alcoholic subjects.

A consideration of the treatment of pneumonia would not seem complete without prominent reference to the great need of prophylaxis. Since the pneumococci exist almost in pure culture in the sputum and in a highly virulent state, every precaution should be taken to properly disinfect it at all times. If pneumonia is spread by contact at all, it is by exhalation and the expectoration. If we could destroy the virulent pneumococci and they exist only as they come from a pneumonia patient, the disease would soon be reduced to a minimum.

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ANGINA PECTORIS, COMPLICATED WITH EPILEPSY AND CHRONIC MALARIA

J. HERBERT DAREY, A. M., M. D., C. M., FELLOW OF THE AMERICAN ACADEMY OF MEDICINE, MEMBER OF THE IOWA STATE MEDICAL SOCIETY AND AMERICAN MEDICAL ASSOCIATION.

J. H. J., aged 57, came under my observation in the latter part of November, 1903.

FAMILY HISTORY. Father died at 35 years of age of consumption. Patient is the youngest child in the family. He has had three brothers, all of whom are dead, and one sister still living. One brother died at the age of 10 years, cause unknown. One brother died, aged 25 years, two years after receiving a gun shot wound in the chest in the Civil War. Another brother died aged 47 years, of pneumonia. The sister who is now living at the age of 60 years, has been married twice, and has several children by both husbands. She is in a good state of health.

PERSONAL HISTORY. Patient was always strong and healthy. He enlisted in the 8th Minnesota Volunteers in the Civil War and served three years. He has a hospital record for acute malaria and suffered from rheumatism. After being discharged from the 8th Minnesota, he enlisted in an artillery regiment in the regular service, and was honorably discharged in 1866, with a surgeon's certificate of good health.

For the following notes I am indebted to Dr. E. H. Dwelle of Northwood, who attended J. H. J. in February, 1902. "Previous illness: Rheumatism and malaria in army. Has attacks of epilepsy, Coughs every winter. Present illness: Severe cough for about four months. Much expectoration. No blood. Soreness and pain in region of spleen. Sleep, appetite and bowels fairly normal. Expectoration less now. Physical examination: Nutrition poor. States loss of twenty pounds, since last summer. Lung expansion poor. Vocal fremitus increased on lower left lung. No rales heard. Heart apex beat not visible nor palpable. Pulse strong, regular, about 80. Soreness and tender-

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ness in abdominal muscles. Liver enlarged. Knee-jerk increased."

The above notes hold good for his present condition, except that he has not had so much cough this winter. He is troubled with a "chronic winter cough" however. For about ten years after leaving the army he worked at his trade as a harness-maker, feeling fairly well most of the time, though he had spells when he felt very poorly. Probably this was due to exacerbations of his chronic malaria and attacks of chronic rheumatism. About this time he began to have attacks of epilepsy, from which he has suffered ever since, at irregular intervals. He has the "grand mal" or true epilepsy, falling over anywhere and becoming unconscious, biting his tongue, and frothing at the mouth. Patient is married and has five children, two boys and three girls, aged from 22 to 5 years. Children are fairly healthy, except oldest boy, who is not bright and who has the "petit mal" frequently, and this winter had one attack of "grand mal," falling unconscious out of doors, and losing quite a lot of blood from numerous scratches on his face, due to his having the convulsive seizure on the frozen ice and soil, just outside the kitchen door.

PRESENT ILLNESS. I was called to see J. H. J. on Nov. 20, 1903, and found him suffering from an attack of angina pectoris. He had been feeling unusually well during the summer, but during the latter part of August and September, began to feel poorly. He had had three distinct attacks similar to the one in which I found him, for which he had taken no treatment. I found him suffering from a well marked attack with the characteristic cramp over the cardinal region, pain running down the left arm and pulse feeble, about 76. I prescribed digitalin 1-60 gr., nitroglycerin, 1-100 gr., and Strych. Sulph., 1-60 hypodermically at once, with Sod. Brom., gr. 10, Tr. digitalis m 10, every four hours, as he was very nervous, and Ferri Quin. et Strych. Citr. gr. iii. t. i. d. as a tonic. I also ordered Nitrite of Amyl. in 5 minim pearls to be kept on hand, and used at once, in case he should have another attack.

December 9, I found that he was having poor spells every other day and on questioning him closely learned that he had been laid up in a hospital during the war with acute malaria. I diagnosed this condition of feeling poorly every other day, as due to chronic malaria, and put him on Quin. Sulph. gr. 1 t. i. d., and ordered him on the well days to take double doses. This treatment was attended with marked relief to the symptoms. I did not see the patient from Jan. 1, to Feb. 1, 1904, when I was called in. I found him in fairly good condition. He had had no further spells of angina pectoris since December,

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and his chronic malarial condition was much improved. I had added Liq. Arsenicalis m 5, to the Quin. Sulph. to assist him in getting rid of his malaria and this proved of marked benefit.

On February 7, I was hurriedly summoned from dinner to see him. His boy had run all the way to my house to call me, and he said his father was having a hard spell, much worse than usual. I ran down as quickly as I could, about half a mile to his residence, expecting to see him in an attack of angina pectoris, or perhaps dead. I found him suffering from a very severe attack. He was using the Nitrite of Amgl. pearls by inhalation in a handkerchief freely. His nearest neighbor, a veterinary surgeon, happened to be there, to inquire how he was, and he proved of invaluable assistance to me. The patient was very nervous, shaking all over and hardly able to keep the handkerchief applied to his nose for trembling. He was quite cyanosed also. He was sitting in the parlor and I thought it would be better to bring him into the sitting room, where there was a good fire. The veterinary surgeon and I took him each by an arm, and he was able to walk into the sitting room with our assistance. He kept on trembling violently and getting worse and more cyanosed. The veterinary surgeon kept trace of his pulse for me, while I was preparing to give him a hypodermic of brandy. While I was getting my syringe ready, he suddenly rose to his feet, and muttered something like "whiskey." He was entirely unconscious. I saw there was no time to be lost, so I grabbed the bottle of brandy on the table, and ran over to him, and tried to force it to his lips. He did not know enough to drink it, but was struggling with the doctor and me, shouting at the top of his voice, "Hurrah for Abe Lincoln! How in H—— did we get up here! Hurrah for Abe Lincoln!" I had all I could do to hold his right arm, as he was swinging it violently about his head, like a man waving his hat, and cheering at the top of his voice. He was fighting the battle of Look Out Mountain, above the clouds. All this time, he was entirely unconscious, with his face as black as a hat, cheering, swearing, fighting and struggling with us, so that we had all we could do to keep him quiet. I only managed to get him to swallow some brandy by forcing the bottle between his lips, and using some pretty vigorous army surgeon's language myself. He took several great gulps, about three ounces, I should judge, and then suddenly sat down exhausted. I expected to see him fall dead at any moment, for his pulse at the wrist was imperceptible. He gradually came to, however, and recognized us. He remarked that that was the best whiskey he had tasted since he was in Kentucky, during the war. I firmly believe that

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he would have died there and then if I had not succeeded in forcing the bottle into his mouth and pouring the brandy down his throat, when of couse, he swallowed it automatically. His face and tongue especially, were black for three hours afterwards. Luckily he has no teeth, or he might have bitten his tongue severely. I gave him a hot foot bath with mustard in it, in about an hour, for his feet were cold, and some more brandy when needed. He evidently had an epileptic fit, in conjunction with his attack of angina pectoris. I also shaved the back of his head up to the external occipital protuberance and applied a blister to it.

The aura of epilepsy always seems to start from his left side at the region of the spleen. Next day when he had recovered from the immediate attack I examined his side and found that the splenic dullness extended six inches vertically. By pressing under his ribs I caused him to wince, this showing considerable enlargement of that organ. I applied a large blister of the red iodide of mercury to the side, one drachm to the ounce, and repeated it in a few days. I also put him on Liq. Arseni et Hydrargyri Iodidi m ii t. i. d., which he is taking yet, in addition to the quinine. Since that time he has been gaining steadily, and has had no more attacks of angina pectoris, nor of epilepsy. As the weather grows warmer, I am confident he will improve more rapidly. His appetite is good, and he can do light work, but lifting of any kind hurts his side. The splenic dullness rapidly diminished. I feel sure that it is the condition of chronic malaria with an ague-cake spleen that has caused his epileptic convulsions, as this is always the starting point of his attacks, and he feels sore in the left side for several days before the epileptic fit comes on. By judicious treatment I think his epileptic fits can be kept in abeyance, while his angina pectoris of course, is liable to carry him off at any time.

The patient though a poor man, a harness-maker by trade, comes of a good family, his father's brother having been the Hon. Reverdy Johnson, at one time United States Minister to Great Britain, while his father has been a State Senator in Minnesota. His case is certainly a most interesting one, from a medical point of view, and I think he could have been saved years of suffering and inability to work at his trade, had his condition of chronic malaria been diagnosed and properly treated, and he could also have been spared the misery of being an epileptic for thirty years or more, and bringing into the world a family who all have a tendency that way more or less, and two of whom have epileptic fits.

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Discussion on the Paper of Dr. Darey

G. R. SKINNER.—I have a little doubt about a person carrying parasites around in the blood for thirty or forty years without showing themselves earlier. I have been on the Board of Pension Examiners for perhaps twenty years and we have examined the blood and have never known a single instance or never in one single instance found malarial plasmodia. I believe the question of whether or not it is chronic malaria is easily settled by putting a little blood on the microscope and in that way determine it easily. The question of doubt can at once be removed in my opinion. I think that other things might enlarge the spleen but it seems to me that no man can carry malarial plasmodia in his blood for forty years without some demonstration of it other than from epilepsy.

J. H. DAREY.—I have nothing to say other than the blood was not examined and consequently no plasmodia was found. I think the clinical results are sufficient to indicate that it was malaria. That is, quinine cured him any way.

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TUBERCULOSIS OF THE PERITONEUM

L. C. KERN, WAVERLY.

The first duty of the physician to his patient, as well as to himself, is to make a correct diagnosis. After making a diagnosis he is able at once to formulate the right treatment. In no disease is the correct diagnosis of more importance than in tuberculosis.

During the last decade much improvement has been brought to those suffering with this terrible malady by reason of the early and more certain diagnosis of the disease.

The microscope is utilized in many cases. In others, where its use could not be employed, we have come to a better understanding of the clinical picture and symptoms of the disease.

One is amazed when he stops to consider the fact, as stated to me not long since by a brother practitioner who had recently come from abroad, that in the post-mortem findings in one hospital, he had the fact stated to him that over eighty per cent. of all post-mortems showed tuberculosis in some form, either active or healed.

If such is the case, then tuberculosis becomes at once the most important factor with which the doctor has to deal. I am forced to believe that the laymen as well as physicians are now recognizing this fact.

Tuberculosis is a disease that readily attacks any tissue of the body. The form of tuberculosis of which I wish to say a few words is tuberculosis of the peritoneum. To me it is one of the most interesting and important types of the disease. It becomes so for several reasons.

I am aware that in my earlier work I failed to recognize the disease. My hope today is not to go into the matter of treatment as one might suppose, but to call your attention to the clinical aspect of these cases.

After each doctor has made the diagnosis he will at once apply the treatment that seems the best to himself.

Some authors state that a diagnosis of tubercular peritonitis is impossible, but experience leads me to question such statement very seriously. However, the diagnosis becomes at

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once a difficult matter and one impossible to make in some cases.

In its clinical manifestations tubercular peritonitis varies greatly. We see much difference between the disease in the child and in the adult. (The fact that mistakes are so often made has given this subject a great interest to me.)

One of my cases some years ago gave all the symptoms of obstruction of the bowels; another case I saw in consultation was operated upon for appendicitis; another case also seen in consultation was treated first for typhoid fever and later for malarial fever. In this case all physicians who saw the patient were mistaken at the time. Later on the little fellow died of tuberculosis of the peritoneum.

The disease is due in all cases to the invasion of the tubercle bacillus. It may rarely be primary; it is more frequently due to an extension of the tubercular process from some adjacent organ; by a direct blood current; ulceration, or through the lymphatics, or it may be a part of the picture of acute miliary tuberculosis. This latter often is the very acute form seen.

All acute cases seem to be of this type or are due to perforations into the peritoneal sac from some adjacent organs having a tubercular condition.

The form most often seen is the chronic form. Adelbert's classification and the one simple to work from is (1) ascitic, (2) ulcerous; (3) fibroid.

Another author looks at the different types as but conditions brought about by studying the life history of the bacillus and says:

"It gives a somewhat fairer understanding of the subject, however, if we consider the multi-form varieties of its exhibition from the standpoint of the bacillus and observe each stage and its results. We then see under the varying circumstances we have (1) an eruption of acute miliary tuberculosis on the peritoneal surface, so acute that even acute infectious diseases or strangulated hernia, (or obstruction of the bowels or even appendicitis) have been suspected, or (2) an enormous accumulation of ascitic fluid with rapid wasting, slight pain and no fever has been found to follow a slower deposition of the tubercles widely scattered over the peritoneum. (3) A persistent pain or tenderness of the abdomen and irregular areas of dullness, associated with slight afternoon temperature and loss of appetite or flesh, have been found to indicate diffused tuberculosis of the peritoneal cavity without fluid but with a varying amount of plastic exudation partly sealing its walls together, or (4) wasting of the body with irregular tympanitic distention, fever, anorexia and sweats, associated with huge cakes of matted

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lymph and omentum, or sacculated ascites or pus have been found to illustrate the latest steps of the tubercle development with caseating deposits of lymph, purulent degenerating of ascitic fluid and cicatrizing masses of gray miliary deposits, or (5) the mishaps due to degeneration of caseating patches ulcerating into the bowel causing fistulae or extravasation of feces into the peritoneum — (once known as *tabes mesenterica.*) (6) And finally a retrograde course in the life of the bacillus and its products may leave an abdominal cavity partly sealed by the atrophied tubercular elements which may give the patient years of comparative health."

The mode of entrance as has been stated may be by the medium of the blood, through the lymphatics or ulceration from some organ.

The lungs may be the original focus or the pleura or bowels, especially the latter in children. In females we see extension from the pelvic organs and especially from the Fallopian tubes. In either sex it may be the appendix.

In consulting the authors I find older writers state that males were more often affected than females, but later writers state that the cases stand three females to two males. In my own observation nearly all cases were females.

Age seems to have some influence in bringing the disease. Most cases are found between the ages of 15 and 40, although children of even less than one year of age have been reported as having the disease.

A general tuberculous tendency seems to play a part also in these cases. Those people of tall slender stature, thin chests with little expansion and shalolw respiration, are often ones seen with this type of tuberculosis as well as other forms of the disease.

Traumatism of the abdomen is a cause. A goodly number of females date their infection from the time of pregnancy, an abortion or miscarriage. Three out of ten cases I have known this to be true. These people often belong to a family whose history is one of tuberculosis in some form.

The symptoms of tuberculosus peritonitis vary in accord with the type of the disease and age of the patient. Pain is the one most constant symptom. It is usually referred to the umbilical region, lower abdomen and back. It may be very acute and constant or have exacerbations and simply a condition of soreness of the abdomen at other times.

One is often impressed with the posture and gait of these people. They cannot walk erect with comfort. Deep pressure causes much pain. The abdomen has a sort of doughy feeling. At other times it may be distended with gas. Several of my

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cases have complained of nausea and vomiting. In one case this became so serious as to interfere with nutrition to an alarming degree.

While all cases do not have the hectic fever, yet this is a valuable sign especially in the class of cases in which we find tubercular peritonitis. I make it a routine practice to take the temperature of cases of mysterious origin, and one is greatly repaid for his painstaking.

If possible I give them a thermometer or have one purchased and a careful record kept of the morning, noon and evening temperatures. I believe it is as characteristic to have a morning subnormal temperature as to have an evening rise while in some acute cases we find a temperature of 102 degrees or even higher, a temperature of 99 to 100 or 101 degrees is quite characteristic of this disease.

The pulse is usually correspondingly rapid. A few cases complain of chills followed by sweating. While a few cases of those I have observed have been constipated.

I have found diarrhoea to be very severe in three out of the ten cases. One case began by having two or three loose movements per day of partially undigested food, which was soon followed by an increase of seven to twenty-two stools per day.

In another case this diarrhoea had been more or less constant for two years before seeing me. The diarrhoea is undoubtedly caused by ulceration in the mucosa of the intestine, probably the small one.

As a rule these people have a fair or good appetite to begin with but this is soon lost and a poor appetite and symptoms of indigestion are commonly the rule.

Kelly speaks of the pain in urinating as a symptom in seven out of twenty cases. I saw it well marked in only one case. In only one case did I find the menstrual function entirely stopped. The flow is apt to be of a lighter color and to be accompanied by some pain of dysmenorrea.

Tubercular peritonitis in children presents a somewhat different view than the same disease in adults. It is a more frequent disease in children than is commonly supposed. Many cases of tubercular peritonitis of course, are a part of the general picture of tuberculosis. This, of course, is the acute form and is often complicated by ascites. A more chronic form is the fibrous; ascites is not usually present in this form. We have in this more of an exudate that causes matting together of the intestines and omentum.

A third form is that in which these deposits ulcerate and soften from caseation. This form is accompanied by more fever and general prostration. In many of these cases the

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lungs, or some other tissue, are also involved at the same time.

In children where we have tympany of the abdomen or ascites with gradual emaciation, loss of appetite and slowly increasing anemia with fever and sweating, we should always be on the lookout for tubercular peritonitis.

One form often seen in children is the so-called umbilical abscess. This form of inflammation of the tissue is in nearly all instances due to the infection of the tubercle bacillus.

As I stated in the earlier words of this paper, the matter diagnosis is of the first importance. The fact that physicians of considerable experience tell of not having seen a case of tubercular peritonitis makes me fear that for some reason they have failed to recognize the disease and have called it something else.

As one author says: "In attempting to make a diagnosis of tuberculous peritonitis — it is at once evident that those symptoms most reliable and characteristic of tuberculosis in other organs fail us here. In many patients the healthy appearance and good family history disarm any suspicion as to the latent tuberculosis in the mind of one not specially familiar with its peculiarities."

This fact should make us careful in examinations at all times and taken with the well known prevalence of tuberculosis in some form, we will often be well repaid for our work in making the correct diagnosis early.

In those cases in which tuberculosis is present in some other organs, we may not be so easily deceived.

In many instances palpation furnishes us very characteristic signs. In cases of thin abdominal walls, as we find in some of these patients, we can feel thickening of the omentum and fibrous bands between the intestines giving a sort of doughy feeling of masses that are more resisting than normal tissues of the abdomen.

The afternoon and evening fever with a subnormal morning temperature often if persistent, give us a clew to work from. In the acute cases we must distinguish it from typhoid fever, appendicitis and hernia.

One of the important events in tubercular peritonitis is occlusion of the bowel. I had the opportunity to see one of the most marked of all the cases I have ever seen under this circumstance.

The patient of forty years had been treated for rheumatism by a very distinguished practitioner. She came home and called me saying she had pains in her abdomen. I diagnosed pelvic peritonitis and applied hot applications which relieved the pains

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and stopped the vomiting. She had a temperature of 99 to 101 degrees.

But under no circumstances could I get the bowels to move, neither by medicine per stomach nor high injections. On the twelfth day I opened the the abdomen and found her stomach adherent to the transverse colon and the most marked case of tuberculosis of the peritoneum, I had ever seen.

Her bowels moved on the third or fourth day and all went well as far as they were concerned. She died of acute miliary tuberculosis in about three months.

In most ascitic cases the diagnosis may rest between cancer of the peritoneum, cirrhosis of the liver or a chronic simple peritonitis or we may have to eliminate syphilis.

In women we have still other factors such as pelvic peritonitis, pyosalpinx, cancer of the ovary with effusion or even an ovarian tumor.

A general practitioner is the one who is most apt to see these cases first as they all go to the family physician first, and if he isn't very careful in his examination he will be in error in some of these cases. I am sure the only way in this matter to be sure no mistake is to be made, is to make a thorough examination under anaesthesia and if after this he is in doubt he can call a specialist to his aid. But I am sure if this is done he will by careful study of his cases, come to a correct diagnosis.

Examination of cases of tubercular peritonitis impresses one with the fact that the abdomen is more persistently tender than in simple inflammation of the peritoneum.

The routine use of the thermometer in office practice is something we are all negligent in I fear. I wish to emphasize the use of that wonderful aid in making the diagnosis of the disease under consideration. True, all cases do not show fever, but often a persistent subnormal temperature should make us suspicious. So I say be sure to know exactly the temperature in all cases.

A persistent evening rise is so pathognomonic of tuberculosis in some form. Examine the chest well and see if you also have a pleurisy—that may assist in ferreting out your abdominal trouble.

In children we have a picture of involvement of the peritoneum in a general tubercular condition, often with ascites. As said before one finding an acute ascites in a child under ten years, can be quite certain of tuberculous peritonitis. Of course, this absorbs in some cases and so the diagnosis may remain obscure.

The disease is more common in children than we have generally supposed, I think.

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In making the diagnosis one can use tuberculin if such use seems wise to him. Its utility in a measure is yet to be proven.

To briefly sum up my points as to a diagnosis:

(1) Family history, this is valuable as pointing to tuberculosis but does not negative such diagnosis.

(2) General appearance of patient, one often seems to diagnose in this way. But again the most healthy in appearance may have an incipient tuberculosis.

(3) Sudden onset of disease may follow miscarriage or injury to abdomen.

(4) Pain in abdomen increases on walking or riding.

(5) Afternoon fever — may be subnormal temperature in morning — may have sweating.

(6) Change in form of abdomen with ascites or masses to be felt on palpation.

(7) Persistent tenderness of abdomen.

(8) May have periodical diarrhoea especially if disease exists in lining of intestines.

(9) Howard Kelly makes special mention of pain on urinating. Personally I have seen this in only two cases in ten.

(10) Abscess of navel. In children this is usually tuberculous if it involves the deep strictures including the peritoneum.

The prognosis of tuberculous peritonitis was at one time considered to be very grave. It is a subject on which many and diverse views have been expressed.

Sutherland of London in an article in the Archives of Pediatrics, says: "The great question as to whether the disease tends to run a favorable or unfavorable course may be still unsettled. Twenty-five years ago the prognosis was regarded as hopeless. Ten years ago it was considered more hopeful especially under surgical treatment. Today, we are still searching for more light, but I am sure we all feel more hopeful about these cases than formerly."

The exact definition of the word recovery as used in this disease must make some difference in the final analysis of these cases.

Those patients which show no active evidence nor latent tendency to the disease for one year after we have marked them as "Recovered" are the ones we have no doubt about declaring as recovered.

Some authors insist upon the patient showing no evidence of the disease in three to five years.

"Tuberculous peritonitis, in its uncomplicated form, lasts usually from six months to a year or longer. Perhaps in no form of tuberculosis does nature make greater or more successful efforts to cope with the disease. The formation of

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fibrous tissue is nature's method of shutting up the tubercles and starving them out."

Again to quote Sutherland in an article chiefly considering prognosis:

"(1) In uncomplicated tuberculous peritonitis the prognosis is good.

(2) Where tuberculous pleurisy is present the prognosis is still favorable.

(3) The prognosis is less favorable in case of (a) strong family history of tuberculosis — (b) an infancy passed under bad hygienic and dietetic conditions — (c) constitution of feeble resisting power, or (d) a history of severe infective illness in early life.

(4) The prognosis is less favorable in the presence of one or more of the following symptoms, — continuous pyrexia, rapid wasting, persistent diarrhoea, rapid pulse, or recurrent acute exacerbations.

(5) The prognosis is rendered less favorable in the presence of one or more of the following local complications:

(a) Tuberculous ulceration of the bowel.

(b) Extensive caseation of the mesenteric lymp nodes, or of tuberculous masses.

(c) Localized suppuration from infection through lymph nodes, or intestines.

(d) Obstructing symptoms from bands or matting of intestines.

(6) The prognosis is bad in case of the following complications:

(a) Rupture of a suppurating lymp node or perforation of an intestinal ulcer into the peritoneal cavity.

(b) Pulmonary tuberculosis.

(c) Tuberculous meningitis.

(d) General miliary tuberculosis.

(7) In tuberculous peritonitis the prognosis is not appreciably affected by simple laparatomy."

The above relates more particularly to cases in childhood. The cases in adults and especially those in females where the pelvic organs are involved, must be regarded principally in the light of their complications and the treatment employed, which in many cases is surgical as well as medical.

The treatment of tuberculous peritonitis is both medical and surgical. Some time ago it was considered to be medical in all cases. Then the pendulum swung and surgery was the only treatment. However, during the last four or five years, the pendulum is again swinging back towards the medical side of the question.

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Guthrie, Physician to the Children's Hospital, Paddington Green, London, says: "In discussing the medical treatment of tuberculous peritonitis, I am hampered by the prevalent notion that surgeons alone are able to cure the disease."

As stated in the early words of this paper, I do not desire to enter into the discussion of the treatment to any length. I am fully aware that all cases are not to be treated medically nor are all cases to be operated upon. The type of the disease and character of the symptoms should decide the treatment.

"We cannot claim at present to slay the tubercle bacillus within the body by any drugs or antitoxins," says one author, "but the resolvent action of such drugs as mercury and iodide of potassium on teberculous inflammations are open to discussion."

Arsenic is another drug used quite extensively in these cases. By some, quiacol and iodoform are held in repute. Cod liver oil is used rather as a food than as a medicine. All medicinal treatment of these cases must be almost entirely symptomatic.

Pain requires rest in bed, painting abdomen with iodine or applications of heat to abdomen. Flatulency and diarrhoea, dieting and bismuth. In severe cases, chalk and opium will be found useful. Constipation requires enemas, castor oil or some laxative like cascara.

Diet must be as rich and nutritious as the circumstances of the case will allow. Unfortunately, in those cases where we would force the feeding, we cannot do so many times.

The hygienic management of these cases is of the utmost importance. Rest in the recumbent position in the open air if possible. It seems to be even more suitable for these cases than those of pulmonary infection.

The influence of good sunlight must be very beneficial to all of these patients and must be insisted upon.

However, a great percentage of these cases are to be treated only by the surgeon. If, after a certain length of time or medical treatment, we see no improvement, we must call surgery to our aid. The pathological anatomy of many of these cases should lead us to try surgery at once.

Another question arises: "Does tuberculous peritonitis have a tendency to spontaneous cure?" Some cases would seem to prove this. The method of cure or improvement of laparatomy is another question yet unanswered. Is it the light and air entering the abdominal sac for a few minutes? Yet the fact remains that the simple opening of the abdomen does improve and even cure these cases without plastic work or any particular manipulation of the peritoneum.

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Guthrie again says: "In conclusion we owe a debt of gratitude to surgeons who through fortunate errors in diagnosis, have taught us that conditions once held incompatible with recovery are by no means necessarily fatal. Those who advocate indiscriminate operations may be reminded of the well known story of Ambrose Pare, the celebrated French surgeon. Once, after a battle, he ran short of boiling oil and could not sleep for thinking of the sad plight of the wounded who had not received their share. But next day he found them infinitely better for being without it."

Discussion on the Paper of Dr. Kern

C. F. WAHRER.—I believe it is best to give our attention to one point. I want to pay my respects to one reference made in the paper. It was either Mark Twain or Josh Billings who said, "It is not the lies that hurt but believing the many facts which are not so." A long while ago when we were little fellows, our friends and our parents used to tell us ghost stories. You do not believe in ghosts, do you? No, you do not; and yet, even today, when you pass by the grave yard and hear a little noise you look around—and of course it is not remarkable for a doctor to be scared when he hears a little noise or when he goes past a grave yard. I want to impress how a certain thing will cling to us. The essayist referred to the fact that some of these cases might be and have been mistaken for malaria. You know we learn many things that are not in the text books—we hear the others say it and we learn to believe it. We have heard and it sticks fast to us, of the periodicity bugaboo, when malaria comes up. We have periodicity in tubercular diseases as has been recited to you. We have morning sub normal temperature, we have afternoon exacerbations, pulse rise and other exhibitions. Still we do have periodicity in malaria. It is the same way in tuberculosis, we have periodical manifestations, and many of us, who are apt to jump at conclusions, are likely to treat many of these cases, in their beginning as malaria, especially if we are crowded very much and have not the time to make the necessary diagnosis. I think it is well enough to exclude malaria as often as possible. While the giving of quinine in one grain doses three times a day can do no great harm to the patient, that in conjunction with good whiskey —and all whiskey is good, at least I never heard of any that was not good—can do no great harm, except the harm of playing with patients instead of establishing an absolute diagnosis as soon as possible.

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WM. JEPSON.—I think we are indeed fortunate to have had the paper presented to us this afternoon in the original manner that we have. There are a couple of points connected with this subject of tuberculosis of the peritoneum that I would especially like to emphasize, which was brought out by the author. The first to the frequency of the condition. Ladies and gentlemen, it is certainly more frequent than we have any conception of, excepting to those who have numerous occasions to enter the abdominal cavity. Second, under a mistaken diagnosis many cases certainly get well without any surgical or medical interference. When I say medicine or medical, I mean direct intervention in the way of administration of drugs presumed to be capable of destroying bacilli of tuberculosis. I believe medical men can do it but not in that direct way. The time that this can be done is in the early stage of the tuberculosis of the peritoneum and not in the late stage. That brings up again the question of diagnosing tuberculosis in the early stage. I do not think we can do so nearly so often as we think we can. In other words, the bacilli of tuberculosis may find its way in the peritoneal cavity through two routes; one being the rupture of adjacent tubercural area with the result that the pus or tubercular debris is disseminated all over the cavity leaving here and there miliary tuberculosis. Then we have it as a local manifestation involving one area. Let me say here I personally have no confidence in this claim of the baccilli of tuberculosis having capacity to travel along the motile organs through the cavity of the uterus and along the fallopian tube against a stream which is constantly flowing in an opposite direction, at least in the fallopian tube. These are other reasons why women have those parts more frequently involved than other parts, of the peritoneum, which I will not refer to. Why can we not diagnosis it? Because, in the early stage the baccilli of tuberculosis give rise to an inflammation which is not associated with tuberculosis, and which goes unrecognized. What are the symptoms we first expect? The essayist spoke of a disturbance of temperature. The most marked phenomena is that of morning depression below that which is normal for that period. That is more valuable in diagnosis than the afternoon rise.

Furthermore the fact that it continues through an undue period of time but that is not the next symptom we get. The next symptom we get is that of an infusion in the peritoneal cavity which may become general or may become circumscribed or encysted. When we have an infusion into the peritoneal cavity the question arises as to its cause. I believe there is only one way we can make a diagnosis as to its being tubercular; removing some of the liquid by aspiration and subject it to a

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microscopical examination with a view of determining as to the presence or the absence of an excessive amount of leukocytes. The latter, in a chronic condition will indicate we are dealing with tuberculosis. If we inoculate animals we have that condition manifested to us.

In regard to the matter of diarrhoea; it is a symptom. It comes, as a rule, late. While it may be due to ulcers within, it is doubtless due to irritation of the walls of the intestines through the peritoneal cavity.

Now, we can have this condition simulated from disease; pregnancy, intestinal obstruction, nephritic kidneys; in fact I do not know of anything it can not simulate and that it has not been mistaken for. There was also one point brought out by the essayist that I wish to refer to and it was that of suppuration about the umbilicus in children, being, as a rule, evidence of the existence of tuberculosis, in other words, tubercular peritonitis.

L. C. Kern.—I am glad to have had Dr. Jepson bring out some of the points that I had not made quite clear as he did. I am pretty sure, as I am glad to hear Dr. Jepson also state, that tuberculosis of the peritoneum is much more common than we have ordinarily supposed and many times I found it when opening an abdomen when I did not expect it at all and when I had no idea of what I would find. It may complicate other diseases. The reason that I selected this subject was to bring it before you and to impress you with the fact that there is such a disease that is common and it is the duty, first, of a physician to him and then to his patient to make his diagnosis as early as possible and the best he can.

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SECTION OPHTHALMOLOGY AND OTOLOGY

Thursday 7:00 to 9:00 P. M.

ADDRESS CHAIRMAN SECTION ON OPHTHALMOLOGY AND OTOLOGY

DR. H. B. GRATIOT, DUBUQUE, IOWA.

The "Sioux City Constitution and By-Laws" does not define the duties of the Section Chairman nor does it give any intimation that there is such an officer. I take it that the same duties are expected of me as of the chairman of the past, that is, to indicate in my twenty minute address the progress made in the past year in the branches of medicine included in this section. My two immediate predecessors recognized the futility of such an attempt and established a precedent that I shall imitate, and not attempt to make a report on the progress of the quartette of specialties included in this section a fair consideration of any one of which would require more time than is allotted to me.

It is hoped that before the reorganization fever passes away that some means will be found to afford the sections more time for the consideration of scientific papers and discussions. There was a resolution introduced at the 1902 meeting for the purpose of dividing the society into two sections which was laid over for one year, in accordance with the provisions of the Constitution and By-laws, but at the Sioux City meeting one year later it was not acted upon. Every member working in this section should interest himself in this matter and see that some such change is brought about in the near future. The State of Iowa contains a sufficient number of physicians interested in this line of work to warrant at least one day's devotion to these important branches of medicine.

The advance in Ophthalmology and Oto-Rhino-Laryngology in the past year have equalled those of recent years. No striking new discoveries have been made but improvements in technic in operative procedures, and the introduction of new remedies and appliances warrant us in looking upon the ad-

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vances in this section with the assurance that they will compare favorably with those made in other branches of medicine.

The improvement in the technic of the symblepharon operation, by H. W. Woodruff, by transplanting a large Wolffe or Thiersch graft to the denuded surface, the transplanted skin being held in place by a piece of block tin, is a decided advance in ophthalmic surgery. The relation of the cervical sympathetic to the eye has occupied the attention of the ophthalmologists of the country but the evidence as to the value of sympathectomy in glaucoma is exceedingly contradictory and the question is still unsettled. The application of the X-rays in the treatment of ocular neoplasms and other lesions, and especially trachoma, promises much toward simplifying the treatment of the latter disease and increasing the chances of life in malignant diseases of the orbit and lessening the danger of return following enucleation for intra-ocular growths. The recent investigations regarding the question of "Amblyopia from non-use" in cases of squint tend to prove the correctness of this view. The general interest in irregularities of the ocular muscles has resulted in a vast amount of literature on the subject with improved methods of examination and treatment.

In the line of ocular therapeutics new drugs have been introduced but it is yet too early to predict a future for them. The derivatives of the suprarenal extract have received considerable attention and are effective agents for controlling hemorrhage in operations on the eye ball and upper air passages but there is no reliable proof that they possess any great merit as therapeutic agents in combating diseases of the eye, ear, nose or throat. Protargol and Argyrol retain their popularity although it seems even yet a little too early to predict for them a prominent place in future ocular therapeutics.

In reviewing the literature on Otology one is impressed with the vast number of valuable contributions on the surgery of the temporal bone. In no other region has surgery made greater progress. The improvements in operative technic have relegated the Wilde's incision and the small hole operation to the medical historian and are now resorted to by the unskilled operator only. Suppuration in the temporal bone is now treated in accordance with rational modern surgery with a free opening into the mastoid process which permits of a careful exploration and inspection of the diseased process and enables the operator to remove all the necrotic areas. The improvements in the methods of diagnosis now enables one, skilled in handling diseases in this region, to recognize cases of mastoiditis which were formerly unrecognized and allowed to run their course with a too often fatal termination.

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The improved methods in treatment in other diseases of the ear have been numerous but there is still much to be desired and the field is an inviting one for investigation.

In Rhino-laryngology the investigations and experiments of Dunbar in regard to the cause of hay-fever have been of the greatest interest and it is hoped that he will yet be successful in the preparation of a serum for immunizing susceptible persons to the disease. There has been an abundance of literature on atrophic rhinitis and the reconstruction of the turbinates by the use of interstitial injections of parrafin has been an advancement in the treatment of certain forms of this formidable disease.

The accessory sinuses, Laryngeal Tuberculosis, and the Tonsils have all received considerable attention with a corresponding improvement in methods of treatment.

The eye sight and hearing of school children has been a subject considered by the Boards of Health of several states and a systematic examination of the eyes and ears of the scholars in the public schools in these states has been recommended and adopted. So far as I have been able to determine the Iowa State Board has not considered this important subject and steps should be taken by this Society to bring it to their attention.

There is room for a better understanding of diseases of the eye, ear, nose and throat among the general practitioners. There is a tendency on the part of the physician in general practice to pay little or no attention to diseases of the organs of special sense depending entirely upon the specialist to do this work for him. Every physician should be thoroughly familiar with the use of the head-mirror, the aural and nasal specula, and be competent to recognize any deviation from the normal in these localities. This is especially essential to the physician practicing in the small places remote from reliable specialists. He should be familiar with the commoner diseases of the eye and be able to correct errors of refraction. The common excuse is lack of time and with some of the older men this may be feasible, although there are numerous examples of very busy physicians who are doing lots of excellent work in this line. The young man entering on his career will find plenty of time to devote to this work and he will not only be well rewarded financially, but will receive an excellent training which will be of immense value to him in his future work, especially in the line of diagnosis. The specialist should be used as a consultant and have trusted to his care certain delicate cases which his experience enables him to handle to better advantage than one who sees only an occasional case. There are too many itinerant opticians and quack eye specialists traveling through the smaller towns

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peddling spectacles to people who should be and would be patients of their physicians were the opportunity afforded them. The resulting damage is not that "the glasses do not fit" but so many cases seek relief for failing vision which is not due to a refractive error but to some diseased condition of the eye which if taken early by more skilled hands might prevent future serious trouble. This is especially true of glaucoma which so often goes unrecognized until irreparable damage is done.

The care of the eyes of the new born is a subject too often neglected and considering the permanent damage that so quickly follows such neglect humanity demands that more thoughtful attention be paid to it. The propholactic treatment of acute otitis media should receive more consideration in the management of the acute febrile diseases, and when this complication does arise it should be early recognized and prompt and energetic measures instituted for its relief.

In cases of hypertrophy of the pharyngeal tonsil it is important that operative measures be not too long delayed, as deformities of the upper jaw or thorax will continue to progress and hearing perhaps become permanently damaged before the child "out-grows" the difficulty. The early recognition of these and numerous other diseases is almost exclusively in the hands of the family physician and he should appreciate their importance and be able at least to recognize them and see that intelligent treatment is instituted for their relief. It is hoped that with the extended college course that more time will be devoted to Ophthalmology, Otology and Rhinolaryngology and that they may receive the attention they are entitled to.

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GLIOMA RETINAE

ELLET O. SISSON, M. D., KEOKUK, IOWA, MEMBER IN INTERNATIONAL OPHTHALMOLOGICAL CONGRESS.

Schöbl defines Glioma of the retina in general terms "as a malignant intra-ocular tumor found in infancy, which starts from the retina and after a period of intra-ocular growth leads through increased pressure to ectasia (less frequently to irido — cyclitic processes with temporary shrinkage of the eye ball) piercing the eye ball with a constant tendency to local relapses and metastases and finally cause the death of the patient in from two to three years time."

Its synonyms are: "Neuro-epithelioma" (Wintersteiner), "gliosarcoma" (Virchow), "glio-angio-sarcoma" and "tubular, glio sarcoma" (De Gama Pinto).

There are several exhaustive monographs on the pathology of this tumor and it is hardly within the scope of this paper to dwell at length upon it only to say that the first good description of glioma was given in 1809 by Wardrop. It was based on seventeen cases, observed under the name of fungus haematodes, the malignancy of which he well knew. He also understood the nature of metastases in the skull and even the origin of the growth in the retina. The work of Virchow, Hirschberg, von Grafe and others have proved that the explanation given by Wardrop was the only correct one, and that intra-ocular gliomata spring from the retina. As their special origin shown by Wintersteiner's investigation the inner granular layer was usually mentioned. The pathological histology of the growth has been worked out by Virchow who in 1853 inaugurated the doctrine of the neuroglia and at present his glia is recognized by probably all histologists.

Through the kindness of Dr. Dean I have sections from the same pieces that Wintersteiner used when he presented to the world the microscopic anatomy of this tumor.

Microscopically the tumor is seen to be composed of small round cells and a soft basement substance. The cells consist of a large nucleus surrounded by a very scanty amount of protoplasm, which in many spots possesses minute processes. The interstitial substance, in which the cells are imbedded, is a

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half fluid, so that the whole tumor is of a very soft consistence. Glioma in contradistinction to intra-ocular sarcomata is never pigmented.

When spreading into choroid and sclera and beyond the eye gliomata may sometimes change their character. Berthold was the first who asserted that gliomata may assume a sarcomatus character after having spread into the choroid, and that this membrane irritated by the entering of the glioma cells furnishes the sarcomatous element. In a reverse way it may occur that sarcomata of the choroid take on a gliomatous character. Schöbl reports a remarkable case of glio-fibro-sarco-myo-angioma, which confirms the statement that the character of the tumor often depends on whether or not it has invaded other tissues. Glioma may develop under two forms, namely, as circumscribed glioma and as diffuse glioma. The former, which is found in most cases and which grows from the retina as a tumor, may either extend forward into the vitreous humor (glioma endophytum) or pass backward into the subretinual space (glioma exophytum).

Concerning its anatomical growth Schöbl distinguishes three forms.

1. Simple Glioma of the Retinae.—This name he gives to those forms in which as is usual regressive metamorphoses occur very early, and which starting in the nucleus or in the protoplasm or in both produce nuclear death in the cells.

2. Glioma Retinae Luxurians.—This is a rare group of gliomata in which for a long period regressive metamorphoses are not observed or concern only very small portions of the growth.

3. Crypto-Glioma of the Retinae.—At first such cases grow after the first type. They then undergo regressive metamorphosis. After a varying interval in the disseminated patches in the choroid or optic nerve or in both begin to grow again. They then fill the eye ball, increase its size again, break through it and lead to the well known end.

As regards the frequency of the glioma, fortunately it is very rare. Twenty-two of the great clinics of the world reporting 498,057 patients record 203 of glioma — one-twenty-fifth of 1% — or one case of glioma out of every 2500 cases of diseases of the eye.

The percentage of the involvement of both eyes is very large. Out of 87 cases it occurred sixteen times at birth or in 18.4 per cent. Deducting these congenital cases from the 87 cases, it was found that both eyes were involved in 65 cases out of 71 during the first three years of life.

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Another point of interest is, that the second eye appears never to have been found to become involved by an extension of the disease along the optic nerve and through the chiasm from the first eye. Where both eyes are affected, the disease always develops independently in each eye.

The influence of heredity has not been demonstrated, but Dean (1) reports a case where there was consanguinity between the parents.

Most writers divide the disease into three stages of development: (1) period of intra-ocular growth without increased tension or inflammatory symptoms; (2) glaucomatous or inflammatory period, which ends with rupture of the globe; (3) the period of extra-ocular growth and metastasis.

(1) Journal American Medical Association, Sept. 12, 1903.

Schöbl divides it into six stages according to the age of the glioma.

The initial stage, which he also terms the ophthalmoscopic one, since the diagnosis can only be made by means of the ophthalmoscope, is observed only in extremely rare cases. The reason for this being that the infantile patients do not give any subjective signs as to the positive scotama due to the tumor.

The second stage is that of the amaurotic cat's eye. In this the exterior of the eye still appears free from irritation, yet in a certain direction a pupil-reflex can be observed, followed later by a manifest white or whitish-red or whitish-yellow reflex. At this stage the anterior chamber is shallow. The pupil is somewhat dilated and the iris is sluggish. Intra-ocular tension is generally normal, while vision is abolished or reduced to perception of life.

The third stage is that of glaucoma or irido-cyclitis. As the glioma grows farther into the vitreous chamber intra-ocular tension gradually increases and the clinical picture of the glaucomatous stage results.

The fourth stage is that of ectasy followed by atrophy. In the rare cases in which instead of an increase of tension irido-cyclitis develops, the eye ball may for a time shrink instead of becoming ectatic. In this condition the picture of progressive bulbar atrophy or anterior or total phthisis of the eye ball will be seen.

Perforation of the eye ball by the gliomatous mass constitutes the next stage. When the globe has been filled with gliomatous tissue and its membranes have mostly atrophied and disappeared, the space becomes too small for further growth of the mass, and it begins to perforate the eye ball and to grow exophthalmically in different ways.

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The next stage is that in which the growth has escaped from the eye ball. As soon as the mass has pierced the eye ball it extends very rapidly spreading heteroplastically from tissue to tissue with which it comes in contact. The metastases of glioma in distant organs are produced by the agency of the blood vessels. In 1871 Bizzozero found glioma cells in the blood vessels in a case in which there was metastasis in the liver. Similar reports have been given by Thalberg, Waldeyer and Landesberg. Metastases are more frequently found in the parotid and submaxillary glands; then in the mediastinal mesenteric and retro-perineal glands and in the bones of the skull, in the sternum, and in the ribs. Other forms of metastases have been seen, for example in the liver by Knapp and Rusconi; by Heymann and Fiedler in the ovaries and the kidneys.

As regards diagnosis the following conditions according to E. T. Collins may be mistaken for glioma. Persistence of the posterior part of the foetal fibro-vascular sheath of the lens; masses of tubercle in the choriod; inflammatory or purulent effusion into the vitreous following retinitis or cyclitis usually with the detachment of the retina. In glioma the anterior chamber is uniformly shallow; in inflammatory exudates into the vitreous the chamber is deepened at its periphery (retraction of iris) and shallow at its center (bulging of pupillary border). Synechia are occasionally present in glioma. 'Tis usually increased in glioma, but may be minus; rarely the tension is elevated in pseudo-glioma. Sarcoma of the choroid is differentiated from glioma by the fact that the former usually occurs at a later period of life, and that in the earlier stages of each affection the ophthalmoscope findings are different. In glioma the tumor is seen to involve the retinal structure, which does not, as in sarcoma, merely act as a covering to the globe.

The prognosis, as is well known, is unfavorable, both as regards the return of the growth after removal and the life of the patient. Death may result in any of the following ways:

(1) Involvement of the brain.

(2) Cachexia.

(3) Pressure of the growth on the medulla oblongata.

(4) Suffocation from extension of the growth into the pharynx and larynx.

(5) Pyemia, or septicemia with metastatic abscesses.

Still a number of recoveries are on record and an opinion must be based on the extent of the disease, the condition of the optic nerve being the most important element in the prognosis.

The treatment, of course, consists in thorough enucleation with division of the optic nerve as far back as possible, and any suspicious tissue in the orbit must be sacrificed. When the

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eye ball is filled with gliomatous tissue and it may be suspected that dissemination into Tenon's space has taken place, the extirpation of the eye ball, together with all the adjoining orbital tissue, is indicated. When there is a fungus exophthalmos, or when the gliomatous tissue has extended the orbit, exenteration of the orbit must be performed. In cases which have progressed further, removal of the eye lids must be added to the radical procedure. Eventually it may be necessary to remove some parts of the contiguous bones followed by active cauterization. When the neoplasm has entered the neighboring cavities, especially the cranial, and produces cerebral or cachictic symptoms, operation is contra-indicated. In inoperable cases, which must be left to their fate, symptomatic treatment may be employed to ease the patient's suffering. Antiseptics and narcotics are here of value.

In reporting the following case the author desires to say that the history was somewhat meager.

March 12, 1903, H. E., age 6 years. Youngest son of a family of five. Brothers and sisters healthy and parents healthy but well advanced in years. No history of any eye trouble in any member of the family. Parents stated that they first noticed trouble with the child's eye when it was about two and one-half years of age. First noticed the yellow reflex. Eye would be worse at times and exophthalmos would be more apparent. V. Nil. Had never consulted a specialist, but had had the boy under the care of a quack for a time, who prescribed an eye wash and assured them that the boy would probably out-grow it. When first called, found the little patient suffering great pain. He would bury his head in the pillow in his mother's lap and scream. The pain seemed to come in paroxysms, and this had been going on for several days, the child had taken very little nourishment in the meantime, although he was a strong and vigorous little fellow. There was pronounced exophthalmous at this time, and the eye had the appearance as if it might burst. Made a diagnosis of glioma in the glaucomatous stage and advised immediate removal, to which the parents consented. A thorough enucleation was performed and the nerve divided as far back as possible. There was no suspicious tissue in the orbit, the tumor being apparently confined to the eye ball. The parts healed kindly and the patient made an uneventful recovery. Predicted a return of the tumor. The patient has not been seen by the writer since the operation, but April 14, 1904, the family physician reports that there has been no return of the growth and that the boy is healthy in every way.

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Realizing the rare occurrence of these cases, I thought it might be of interest to collect the number occurring in the practices of the eye surgeons of the state, together with their histories, so with this end in view I sent a circular letter to each one asking for such data and succeeded in collecting reports of ten cases.

Dr. Gratiot of Dubuque, reports one, operation, recovery. Report of case follows: Dr. Pearson of Des Moines, one, operation, child died, probably from metastatic involvement, report of case follows. Dr. Park of Sioux City, one, operation, no report as to result. Dr. Dean of Iowa City, one, no operation, child died, report of case follows. Dr. Young of Burlington, four, only one operated upon, recovery. Dr. Hobby, Iowa City, one, no further report. Dr. Dean of Council Bluffs, one, no operation, patient passed from observation. Drs. Gratiot, Pearson and Dean kindly furnished me complete reports of their cases and I will give the main points in connection with them.

Dr. Gratiot's case: August 2, 1903, M. W., age 2 1-2 years; in June parents first noticed the child was blind in O. S. child had always been in good health; slight external deviation of affected eye, otherwise, external appearance of the eye was normal. Pupil was normal in size and reacted to light. Under homatropine mydriasis in the nasal half of the vitreous chamber could be seen a large mass filling one-half the globe. It presented a white uneven surface with several small blood vessels distributed over it. Tension plus. A diagnosis of retinal glioma was made. August 10 enucleation was performed and patient made an uneventful recovery.

Dr. Pearson's case: Child 18 months of age with a history of some disturbance of the eye extending over the period of six or seven months. When case was first seen, the globe had ruptured and the tumor extended one inch before the plane of the face. Exenteration was performed, but the child died without the doctor's observation about four months later, probably from metastatic involvement.

Dr. Dean's case is interesting because of consanguinity between the parents and that it was bilateral; female, age six months; parents were healthy; no history of any eye trouble in the family could be elicited; parents were first cousins; parents said the right eye first began to increase in size and a few weeks later the left began. The child apparently could not see. Pupils were dilated; would not react to light. Tension in right eye plus 2 and in left plus 1; both eyes were enlarged, the right the more. Lying behind the iris in each eye could be

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seen a large tumor. Diagnosis bilateral neuro-epithelioma; four months after child was seen it died.

The infrequency of these cases makes them interesting, and their fatal termination in every instance, if neglected, illustrates the value of an early diagnosis coupled with active surgical intervention.

Discussion on the Paper of Dr. Sisson

A. R. Amos.—I would like to add one word to Dr. Sisson's paper, in regard to treatment in a case which came under my observation, under the care of Dr. Payne of Boone some time ago. In that case the use of the X-ray was instrumental in relieving the pain which the patient suffered and was a very important matter from the standpoint of both the parents and the little one. It was very much appreciated, indeed, and I think should be employed in the hands of persons dealing with these cases where there is a great deal of pain present.

W. W. Pearson.—The doctor, in his paper has given us a very clear description of this condition and has gone much into detail, more than we usually find in articles of this character. In my few years practice I have seen two cases. I omit one case because it was demonstrated clearly to be glioma. Dr. Amos saw the same case. I diagnosed it as glioma and I lost track of the case and I never learned what the ultimate result was. In the one case the doctor spoke of, the one I gave him a brief history was an extreme one. I have never seen an illustration of that case. It showed more of a tumor and while I operated I am not justifying it. I think Dr. Amos suggested at the time I made a little better looking corpse, but I think it is a question whether that is justifiable or not.

W. B. Small.—I feel that there is no need of discussion on the paper. The one thing to be emphasized is that in all cases of suspected blindness in a child there should be an early examination, and if found to be glioma or even strongly suspicioned to be glioma, should be operated on early, because that is the only time you can expect really good results.

Dr. Rogers.—I would like to report one other case of glioma retina that occurred in my experience a few years ago and I think I need not offer an apology for saying that it is the only case of glioma retina that I have had in my experience of thirteen years. The case was a child of four years of age. It came to me from a neighboring physician in an advanced stage of the trouble. It had been pronounced tumor of the eye ball by the attending physician. An operation was immediately performed. Enucleation was done in the manner described by

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the author. The little patient lived twelve months and died of general infection of the glandular tissues in that region of the body. I want to speak of one other element that was present at the time I did the enucleation; that was the inflammation of the parotid gland. A mass was present as large as a goose egg at the base of the ear on that side. The other eye was not involved during the child's life and four weeks after the enucleation of that eye I removed the mass at the base of the ear, because other glands did not, at that time, seem to be involved and because I had not, up to that time thoroughly satisfied myself as to the positive character of the trouble. The eye ball when removed was probably as large as two ordinary ones. After the removal of this ball the wound healed kindly and the little fellow seemed relieved of his trouble. I gave the parents no assurance, however, that it would be the end of his trouble and he died, I am told, greatly emaciated and after great suffering, at his home about a year after the first operation. I am a general practioner to some extent, and I want to say, that while rare, these cases are such that any of us in the country may see and they are sufficiently severe that it seems to me now is a good opportunity to say what is in my heart to say, that every general practioner owes it to himself and to his patients to be able to recognize these troubles; recognize them by the use of the ophthalmoscope and recognize them early by the use of that instrument. If you do not recognize them early, they practically all die. I believe statistics show but a small number live, but a sufficient number to justify the effort. The disease must be taken early. That can only be done by a very early recognition. One other case that I diagnosed to be glioma retina proved to be Sarcoma. The woman lived two years and a half and died also of infection.

E. O. Sisson.—I am glad Dr. Amos spoke of the X-ray treatment in those cases. I neglected to speak of it. Dr. Gratiot in a report of a case said that the X-ray was being used. In the case I reported it was impossible for the X-ray treatment to be carried out. As to the value of the treatment it is hard to say, but theoretically it should be of value.

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Upon motion, carried, the following paper, "Pain Resulting from Rhino-Laryngeal Lesions," by Dr. W. R. Whiteis, Iowa City, was read by title:

PAIN RESULTING FROM RHINO-LARYNGEAL LESIONS

Pain has ever been recognized as a positive symptom of disease. Ages before objective diagnosis has reached anything like perfection, pain received the most careful study. Books that were written centuries ago describe pain as, "Boring, shooting, jumping, lancinating, ostoscopic." All terms that are in use today to describe the same sort of misery. With the development of modern methods of investigating disease, we have come to depend more and more on the objective and less and less on the subjective symptoms. The fact that a pathological condition which produced great pain in one individual, may be present in another case that is almost free from discomfort makes the diagnostic value of pain hard to estimate. Every clinitian is familiar with the fact that a slight astigmatism may be accompanied with intense headache, and that a much greater error in refraction may produce almost no discomfort.

A gastric disturbance is often accompanied by pronounced headache, and quite as often free from any symptoms that are not referable immediately to the gastro-intestinal canal. An inflamed appendix is usually accompanied by pain but occasionally may lead to suppuration and perforation without this symptom being pronounced.

Illustrations of the difference in individuals in the susceptibility to suffering could be multiplied without number. The degree of dscomfort is not proportionate to the seriousness of the lesion, nor the kind of pain pathognomic of a definite disease, yet the pain is very often of great value in locating the seat of the lesion. Men of wide clinical experience tell us that much depends on the skill and experience of the observer in judging individual sensibility. Though the variation in pain-sensibility is very great, a knowledge of the individual and an acquaintance with his manner of life and occupation will go far toward enabling one to judge of his ability to suffer. While the Teuton and Slav bear pain stoically, persons of Semetic, and Celtic extraction are hypersensitive. The individual variations are largely a matter of education. Soldiers, artisans, laborers, and persons habitually exposed to hardship and suffering un-

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dergo pain with little complaint. Artists, merchants, teachers, and those shielded from exposure are intolerant of pain. Above, and more important, than all other conditions affecting the susceptibility of the individual is an acquired or inherited nuerosis. With almost no exception these persons are keenly susceptible to pain.

In lesions of the naso-pharyngeal mucous membrane and the accessory sinuses, the pain is more constant in character and location, but the ease with which one may make an ocular examination causes us to frequently disregard subjective symptoms. On the other hand it frequently happens that the one symptom from which the patient demands relief is pain.

Pain resulting from pathological changes in the naso-pharyngeal tissue varies in intensity from the light discomfort caused by the passive congestion of a turbinal body to the excruciating, head-splitting pains of an acute obstructive inflammation of the accessory sinuses. As in other parts of the body the acute inflammations produce much greater disturbance than do corresponding lesions that have become chronic. The individual establishes a tolerance by becoming accustomed to the pain or the continued inflammation produces insensibility. Occasionally one sees just the opposite phenomena, an individual in whom the pain continues to grow more and more severe without any appreciatble change in the pathological lesion.

HEADACHE AS THE RESULT OF HYPERTROPHIED TURBINATES.

It is only very recently that the possibility of nasal lesions being responsible for many of the indefinite headaches has received attention. For the past year or two I have made a practice of examining the nasal cavity of all of my patients that suffer from headache. The possibility of an antral lesion being the seat of the trouble prompted this procedure. To facilitate the examination the nasal cavity is sprayed with a solution of cocaine and adrenalin chloride. To my surprise I found that quite a number of patients experienced almost immediate relief after using the spray. The great majority of these cases had no inflammation in the accessory cavities but simply hypertrohied turbinal bodies, and congested mucous membrane. Such a large number of people are relieved from headache by the application of astringents to the nasal cavity that when one sees a case of headache associated with acute corrhiza he may approach it with the possibility in mind that the congested turbinates are the offending parts. In those cases that were relieved by the application of cocaine and adrenalin, I have found the relief becomes permanent when the hypertrohied tissues are removed.

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The following cases illustrate this class: Miss V., age 25, German, school teacher. Had been treated for several months for a dull pain that commenced in the frontal region and extended over the entire head. The patient was well nourished. Physical examination and urinary analysis negative. Examination of eyes showed no error in refraction. The inferior turbinate on right side was greatly hypertrophied and after the shrinking of the tissues by the application of a strong solution of cocaine and adrenalin there was no discharge from the maxillary sinus. With a nasal saw the turbinate body was removed, the nose packed and the patient sent home. Her physician reports that after six months there has been no recurrence of the headache.

Mr. C., age 30. Celt. Student. Complains of periodical headaches of sharp, shooting nature, beginning in frontal region and extending over the head and face. Pain is associated with fever and physical depression. Physical examination shows neurotic tendency. Examination of nose revealed spur on right side and septum badly distorted as the result of injury. The right nasal cavity almost occluded. The application of astringents without the use of cocaine gave breathing space but did not relieve pain. Cocaine and adrenalin gave almost immediate relief from headache. The spur has been removed without improving the condition, other than increasing the space. Because of his occupation it is inopportune to remove the turbinate and correct the deformity now. At a later time this will be done and he has been advised that he may expect relief. This case illustrates a condition that I have found a number of times. A headache of nasal origin that is relieved at once by the application of cocaine even in a very weak solution, but is not affected by the action of adrenalin or antipyrin without the use of local anaesthetics. Since my cases have a neurotic tendency, I am not ready to say whether this peculiar effect is partly a matter of suggestion or whether there is an irritation of the nerve endings in the turbinates that can be controlled by an anaesthetic.

Miss G., German. Age 18. Had intense headache that began in the face and forehead and extended to the occipital region. A slight error in refraction had been corrected by lenses without any great relief. The patient is inclined to be anaemic and has symptoms of hysteria. Otherwise the physical examination was negative. A rhinoscopic examination showed great hypertrophy of both inferior turbinates. The left inferior turbinate body was cauterized, not so much because of the expectation that relief from pain would follow, but because the condition deserved attention and there was a slight hope that suggestion might do good. Now, one week after the treatment

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of the hypertrophy she reports that the headache has all disappeared from the corresponding side but remains just as bad on the right side.

A class of pain closely related to these in etiology, but differing in manifestation has been reported by Dr. Peyer-Porcher of Charleston. In his paper read before the American Laryngological Society, he reports six cases of facial neuralgia the result of inflammation of the maxillary sinuses. One of his cases had been operated on under chloroform no less than four times. At successive periods the spheno-palatine ganglion, all of the teeth from the upper and lower jaws were removed, a resection of the supraorbital, and finally the removal of the glasserian ganglion. After each of these operations there was temporary relief to be followed in a few months by suffering as intense as before. An opening was made into the antrum and a quantity of pus liberated. This, together with the restoration of the normal condition of the nasal mucous membrane, completely and permanently removed the trouble. In five of the six cases reported by Dr. Porcher the tic douloureux was completely cured by removing the intra-nasal pressure and establishing drainage.

Dr. Robertson, of Chicago, has reported a number of cases of headache that were relieved by draining and curetting the maxillary sinuses.

In my own experience I have had a number of patients that suffered from facial neuralgia the result of intra-nasal pressure and antral disease.

The first one was a lady of 38 years of age. For a number of years has been suffering from a facial neuralgia that is most intense in upper jaw and teeth on the right side. Patient has a uterine fibroid of several years duration which gives little trouble other than caused by the increased weight of the organ. An examination showed the teeth to be normal, two having been extracted. The use of a trocar demonstrated the presence of pus in the antral cavity. Because the patient would not submit to more radical treatment, an opening was made into the antrum from the canine fossa and a cannula and plug inserted. After a few treatments the patient was taught how to cleanse the cavity preparatory to moving to another part of the country. After the operation the neuralgia was very materially improved and a report several months later states that though there was still some pus forming in the antrum, pain had practically ceased.

Case II. Miss V., German girl, age 11 years. Well nourished. Complained of periodical headache usually associated with a "cold in the head." There was dull heavy pain associated with a sense of pressure and tenderness over frontal and maxillary sinuses. Physical examination, urinary analysis and refraction negative. Rhinoscopic examination showed hyper-

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trophied middle and inferior turbanate on each side of the nose. The application of cocaine and adrenalin was followed by a discharge of serous fluid from the occluded cavities, with an immediate abatement of the symptoms. The cauterization of the inferior turbinate and the removal of a part of the middle with a cutting forceps gave permanent relief.

Case III. Miss F., American, age 38 years. Has been suffering from neuraligia and headache for several years. All kinds of internal treatment have been found useless. Patient has become almost convinced that treatment was useless and that the pain was incurable, but was prevailed upon to consult an oculist. She was fitted with glasses and received much benefit. After a time another oculist was consulted and another glass fitted. When I saw the case she insisted on having her eyes examined to see if they had changed enough to need new lenses. The cylinders prescribed by both oculists were the same, but there was a slight difference in the spherical lenses used . An examination brought out the same error in refraction that had been corrected by both oculists. The patient is anaemic and a pronounced neurotic and becoming addicted to the morphia habit. The right nasal cavity is almost obliterated by a deflected septum and a large spur and the left turbinal is greatly hypertrophied. The hypertrophy was treated with the cautery and the patient sent home to return in two weeks to have the spur removed and septum straightened. Strong hopes are entertained that this will completely relieve the pain—not the result of the error in refraction.

IV. The fourth case that I wish to mention differs from those already cited in that pressure symptoms were produced by a large tumor in the naso-pharyngeal space.

Mr. F., of German parentage, age 21, consulted his physician concerning a growth that interfered with nasal breathing and produced headache, a foul breath, etc. A diagnosis of adenoids was made and the patient advised to have an operation. When the patient was examined I found a large fibroid tumor occupying all of the posterior nasal space, extending into the right nasal cavity, and downward for an inch below the soft palate. After the use of a general anaesthetic, it was found that the growth was attached by a broad base and had formed adhesions with the pharyngeal surface of the velum. The tumor was cut away with curved perineal scissors and the bleeding controlled by packing the pharyngeal space and anterior nares. An uneventful recovery followed. One year later the patient again sought relief from the same trouble. The pressure symptoms were again prominent but in addition there was much more marked tenderness and pain at the sight of the tumor, and a great

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loss in weight. A second operation was performed, followed by a very profuse hemorrhage. A miscroscopical examination explained the pain and hemorrhage by demonstrating a sarcomatous change. Six months later a small nodule developed and the same region unaccompanied by the symptoms resulting from intra-nasal pressure. A third time the tissue was removed and up to the present time there has been no recurrence.

For the sake of symmetry one should take up a discussion of some of the other inflammatory conditions found in the nose. But I find it is impossible in a paper of reasonable length to more than mention the painful lesions possible in the nose and its associated tissues.

In conclusion I wish to state, that I believe Dr. Porcher is right when he says that the most frequent cause of facial neuralgia is a localized inflammation in the nose, antrum or teeth, and I should add, that in cases of obscure headache we will sometimes gain much by rhinoscopic examination and that occasionally headaches that are associated with errors of refraction may be caused in part by lesions in the nose.

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REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS

We, the committee appointed to review the president's address, beg leave to report:

We commend and endorse all he has said regarding the education of the people to appreciate the great scourge of tuberculosis, its dangers and the scientific methods that may be used to control its spread, and in many instances its cure. We agree with his conclusions that the interests of the people of the state of Iowa will be conserved and promoted by liberal appropriation for the establishment and maintenance of sanatoria for the treatment of those afflicted with this disease and to disseminate the knowledge of prophylaxis.

We deplore the fact that our commonwealth, known for its intelligence, progress and the liberal manner in which it sustains its great public charities, should be so far behind other states in providing for the treatment, prevention and cure of tuberculosis, and we earneslty urge that the members of our profession afford all the information possible to those who form our legislature that we may save to usefulness in our great state a large proportion of those afflicted with consumption.

We congratulate the president upon the progress made in the growth and development of the State Society during his term of office, eighty of the ninety-nine counties having completed their organization, bringing an increase to the State Society of almost 150 per cent. — there having been 600 paid members in 1903, and there being 1,400 in 1904.

E. E. Dorr,
E. Hornibrook,
Geo. E. Crawford,
Committee.

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SECTION OF GYNECOLOGY

REPORT OF CHAIRMAN

JOHN HAMILTON, CHAIRMAN.

Pursuant to custom it is my duty to report the progress in gynecology made the past year. In reading the literature I have wondered how I could incorporate any of the vast amount into my report and have it of any value. The program of this section has many interesting papers which will cover a large part of the field, so asking your pardon for deviating from the ordinary course, I will not make a report but offer in its place a short plea for conservatism in operative gynecology.

This plea is prompted by the report of the chairman, Section of Obstetrics and Gynecology, A. Palmer Dudley, at the last meeting of the American Medical Association, which appears in the Journal, December 12 and 19, 1903, and which I consider the most important article of the year and from which I shall quote to a large extent.

I am also prompted to plead for conservatism after reading the reports of many operators, hearing others talk and seeing some of them do their work. For the past few years it has been the aim of a great many to have a large number of operations to their credit thus enabling them to write and read articles on pelvic surgery, and in the end appear before the public as great surgeons. This desire has led to a multitude of unnecessary operations, and as a result of these operations there have been thousands of ovaries and tubes removed that should now be in their natural places instead of decorating the would-be pathological exhibit of ambitious operators. I say would-be pathological exhibit for I believe there have been more good than bad ovaries removed, and many of these by men whose knowledge of pathology is limited to being unable to discriminate between a normal ovary and one that is cystic to a slight or moderate degree. Not long ago I saw a case in consultation with a physician in a neighboring town. The woman had been under the care of another physician and consultation had with a surgeon, so-called, from Iowa City.

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The patient had a long standing, persistent cough and the Iowa City man decided that it was reflex, due to cervical irritation, and that she should be removed to Iowa City and an amputation of the cervix done which would cure the cough. The family would not agree to this and changed doctors. The woman had pulmonary tuberculitis and died from the same six weeks after the proposed trip to Iowa City.

Dudley says: "How many thousands of suffering, misguided women have offered up their pelvic organs as a sacrifice, for the simple promise from such an ambitious aspirant for professional preference, that such sacrifice would immune them from all further unpleasant conditions peculiar to their sex, and how bitterly have these poor, misguided women regretted in the years that followed their misguided confidence so generously bestowed, when the knowledge was forced on them by sad experience that they had changed one condition of suffering for another equally as disagreeable. A patient with pelvic disease which indicated operative procedure came to me for relief, but begged that I would not remove her tubes and ovaries. I opened the abdomen, broke up the adhesions in the pelvis, split her ovaries in half, took out portions of them that were diseased, slit up the tubes, washed them out, put them back, and closed the abdominal wound. The patient was relieved of her symptoms and retained her normal functions. Three months later she conceived. However, she was so afraid that pregnancy and labor would undo the good work I had done for her, that she had an abortion performed. Then she conceived a second time. Since then I have continued to do conservative work on the tubes and ovaries. My work in this direction has differed somewhat from the work of other men, in that I have not tried to save everything, but I have tried to save what I thought would perform its function normally."

Dudley says that in doing conservative surgery on the tubes and ovaries you should first place the inside of the uterus in a healthy condition and then do whatever work is indicated in the abdomen. That when a woman is past forty years of age that conservative work is not as necessary. That many small fibroids can be removed from the uterus, that a hydrosalpinx can be opened, the tube washed out and returned to its place, the same can be done with a hematosalpinx providing the tube was opened at the uterine end, and that there is only one condition in the pelvis that always requires the most radical and careful treatment, the dermoid cyst.

In operating on these conditions with conservatism in view Dudley advocates the following methods:

In a case of salpingitis pure and simple, the fibriated extremity is closed, dilated and club-shaped. The tip should be

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opened with scissors and the contents evacuated. It should then be washed out. If the tube contains pus it is best to wash it out before probing, in order that we may not carry septic material further into the tube. The tube should be aspirated, then washed out with one of these four solutions: (1) Normal salt solution; (2) twenty per cent. carbolic acid; (3) 1-5000 bichloride; or (4) a very weak solution of permanganate of potassium. After this is done, open and probe the tube. Catch up the tube and straighten it out, bearing in mind the direction of the uterine portion. Introduce the probe gently, and if it passes into the uterus, we will know that the tube is patent. Then, if the tube has not already been washed out, this is done. If the uterus has not been packed previously, it will be noted that some of the irrigating solution will be noticed in the vagina. If so, what excuse have we for removing the tube? None. Our aim is to keep that tube open so it will not close again; therefore, you do a phimosis operation on the end of the tube. Split up the dilated portion and roll it out. Then with fine silk and cambric needle, with over-and-over stitch, you go all around the tip of the tube, until you come to the place you started from, the probe being still in position.

In hematosalpinx the same condition exists, except that instead of being filled with serum or seropus, the tube contains blood that should have been carried off through the uterus at the menstrual period. It is usually due to displacement or twisting of the tube causing a damming up of the blood. This condition is not septic and tubes thus affected can be saved. As the condition is usually due to displacement of the uterus, this must be remedied. The adhesions must be broken up and the uterus replaced and kept in position by ventro-suspension and the tube treated in the same manner as for salpingitis.

Hydrosalpinx, a dropsical condition of the tube, due to repeated congestion and arrested drainage from any cause, is usually the result of displacement of the uterus. It should be treated as a salpingitis and hematosalpinx.

As a result of conservatism in operative gynecology the report of thirty-six operators throughout the United States show twenty-one hundred and sixty-eight operations where repair and not removal of the adnexa was done, with a result that two hundred and thirty-eight, over ten per cent. of these suffering women, were not only relieved of their unpleasant condition but later conceived and were delivered at term. Another report of seventeen operators on eight hundred and fifty-eight cases show five hundred and thirty-three recoveries or marked improvement, thirty-nine unimproved, and a mortality of all of one per cent. Such results should govern the work of us all and

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lead us to do careful work with our main aim to save all we can and as a result have more mothers and fewer women.

Not long ago an operator placed a woman on his table and in less than thirty minutes dilated the sphincter ani, amputated the cervix, opened the abdomen, shortened the ligaments, removed the tubes and the appendix, scraped out a number of adenoids, and removed a mole from the cheek and one from the lip. Where in the name of heaven did that poor woman feel the worst when she became conscious and what did she gain from all that mutilation.

The man who operates on a woman because he can gain consent, and does work that in the end the patient can realize no benefit from, only stands in the way of others who are willing to do fewer operations but from each one he does have the woman see some marked improvement and become an advocate of surgery, and a helping hand in bringing suffering kind to the table of the conservative surgeon. Let not a few of us but all in the future deal kindly with our trusting patients and make more wives and mothers and fewer call them what you may.

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Upon motion, seconded and carried, the papers read by A. P. Stoner, of Des Moines, and C. S. James, of Centerville, were discussed together.

SOME REMARKS UPON PUS COLLECTIONS IN THE FEMALE PELVIC CAVITY AND THEIR TREATMENT

A. P. STONER, M. D., DES MOINES.

Three score years have passed since James Y. Simpson first challenged the universally accepted teachings of the French school as to the origin and location of pus in the female pelvis. Aran and his pupils had long contended that all accumulations of pus originated in the Fallopian tubes, ovaries, or Douglas' cul-de-sac. Simpson, on the other hand, held that pelvic inflammation had its origin in the pelvic cellular tissue, and gave to this process the name of pelvic cellulitis.

For a time the pendulum of scientific opinion swung far in the direction of Simpson's views, and nearly every accumulation of pus in the pelvis was treated with the distinct understanding that the cellular tissue had been invaded, and was the portal through which infection had entered.

It should excite no wonder that in those days of unrestricted sepsis, such views met with ready acceptance. Cellulitis and phelgmon were indeed of common occurrence. So much were they dreaded by the surgeon, that simple operations upon the pelvic organs were undertaken only as a *dernier ressort.* Through the blood vessels and lymphatics, wounds of the parturient canal always invite infection of the cellular tissue. With the exception of the gonococcus, the pathogenic bacteria usually prefer to follow these routes of invasion.

A tendency has been shown by many recent authorities, notably by Pozzi, to go back to the radical views of Aran. Pozzi frankly acknowledges that he believes in Aran's theory; and claims that nearly all peri-and para-metric inflammation are merely forms of salpingitis.

Manifestly, neither of the views outlined can we wholly correct. It is true that an extra-peritoneal purulent deposit may rupture into the peritoneal cavity, or a pyosalpinx invade the cellular tissue of the broad ligament, and thus exist together

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in the same individual at the same time; but there is no reason why each may not exist independently of the other.

Influenced by Pozzi's teaching, I once opened the abdomen for pelvic abscess of puerperal origin, and found the tubes and ovaries normal. Vaginal examination had shown the uterus to be fixed, and a large indefinable mass which I took to be a tubo-ovarian abscess, occupied the left side. The pus, however, was found to be located between the folds of the broad ligament and was easily evacuated by a vaginal incision. Doubtless many cases have been called cellulitis that were in reality one of salpingitis, salpingo-oöphoritis, or pelvic peritonitis. While it may not be frequently met with in the larger surgical clinics, pelvic cellulitis with subsequent pus formation, nevertheless exists as a distinct and separate affection. Cases of infection following child-birth are reluctlantly sent by the attending physician to hospitals for treatment. In private practice, puerperal infection still occasionally follows i ncases in which the most careful technic has been observed. Unfortunately, however, a stigma of disgrace attaches to the attendant, which every practitioner is anxious to avoid, and oftentimes results in his grossly neglecting the case. Therefore, he often prefers to operate himself by incising the abscess, if one forms, which many times is not attended with any difficulty, or else permits Nature to pursue her course, and the abscess gives way at the point of least resistance, which fortunately is usually in the vagina, and the case finally recovers. Doubtless many here can call to mind cases of prolonged suppuration from pelvic abscess; the patient subsequently having born children; which serves to prove that the tubes could not have been the seat of, or seriously involved in the process.

While pus cases following childbirth infrequently reach the hospital surgeon, salpingitis, following abortion, gonorrhea, etc., are among his most common cases. Hence, the surgeon very naturally may be lead to conclude that invasion of the tubes always occurs in pelvic infection.

It is conceded, I believe, that the majority of pelvic pus cases coming to the surgeon for operation, are of gonorrheal origin. The pus in such cases occupy the tubes and ovaries, constituting the well known pus-tube and ovary. Comparatively few cases of gonorrhea are treated by any rational method. Many patients are made worse by the daily office treatment. By the majority of physicians, it seems to be taken for granted that because the patient has gonorrhea, the vagina and uterus must be the seat of infection. Accordingly, a vaginal speculum is introduced and the uterine cavity scrubbed with some silver solution, thereby infecting a previously healthy vagina and

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endometrium. The tubes and ovaries in turn become affected, and with a perfectly clear conscience, the case is sent to the surgeon for operation.

There should be but two recognized principles of treating pus in the pelvic cavity, viz.: I. By freely incising the abscess at its most dependent point, keeping it open and drained until cured. II. Total extirpation of the tissues involved. The history of the case will often enable one to select the proper procedure. Thus a severe infection following labor at term, in which forceps have been used, or the parturient canal otherwise abraded, is much more liable to invade the cellular tissue, than one following miscarriage and retained secundines. In the latter instance, the seat of the infection is usually on the endometrium; and the Falopian tubes are most likely to become the abode of a purulent deposit.

Gonorrhea of the endometrium is practically always followed by infection of the tubes, usually resulting in a pyosalpinx. The gonococcus nearly always travels upon the mucous membrane by a serpiginous process; seldom by way of the lymphatics, blood vessels or through the tissues by direct contiguity, thus rarely invading the cellular tissue.

Pyosalpinx and pyosalpingo-oöphoritis, I invariably treat by total ablation of the abscess, through an abdominal incision. Vaginal incision and drainage, I do not regard as being well adapted for the treatment of pus-tubes. After the most complete drainage, and closure of the abscess cavity, one is never sure that all the infective germs have been eradicated. The gonococci especially, may lie dormant for months and even years, when, under favorable environments they may break out anew, causing a most virulent infection. The proximal end of the tube is especially liable to harbor infective germs, and the attack may be renewed, provided a suitable soil is found upon which to grow. On account of this danger, many operators instead of merely ligating the stump, remove a wedge-shaped portion of the uterine cornua. The practice of opening and cleansing out pus-tubes and returning them to the abdominal cavity, which just now is engrossing the attention of surgeons, is in my opinion seldom a justifiable procedure. Do not understand me as inferring that I do not approve of conservative operations upon the tubes and ovaries, for unless it may seem to jeopardize the safety of the patient, I always endeavor to leave as much as possible. I am unable to find any report of pregnancy following cases in which resection of well developed pus-tubes had been done.

There can be no other reason for doing the operation; there

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is, however, danger of contaminating the peritoneum, and losing the patient's life.

Vaginal drainage of recent cases of gonorrheal pyosalpinx, if practiced before the pus becomes sterile, usually proves to be only a palliative measure, and the pus may sooner or later reaccumulate. Mucous surfaces such as those lining the Falopian tubes, when converted into an abscess, always prove obstinate in healing. While the pus in old-standing cases of gonorrheal infection is nearly always sterile, and may be spread over the peritoneum without harmful effects, it is not so with pus from appendicitis, or puerperal sepsis, both of which are always virulent.

Vaginal incision and drainage, however, is a well recognized modern surgical procedure; and in properly selected cases, brings admirable results. Too many cases, however, fail to obtain permanent relief, the operation either having been faulty, or as my experience goes to prove, such cases usually have been improperly selected. Upon secondary operation through the abdomen I have sometimes found them to represent those of gonorrheal pus-tubes and ovaries, bound down in an almost inextricable profusion of adhesions, necessitating one of the most hazardous undertakings which the surgeon is called upon to treat. In such cases vaginal incision should never have been undertaken. The abdominal route should have been selected in the first place; when doubtless the complete removal of the abscess would have been easily accomplished. It is true that we now and then meet with profoundly septic cases *in extremis*, in which, at that moment, it is utterly out of the question to open the abdomen, and the immediate evacuation of the pus by the vaginal route becomes imperative. When the pus is known to be extra-peritoneal, and can be palpated from the vagina there is no question as to the proper procedure. The cervix should be exposed and the posterior lip grasped with a volsella; brought strongly forward, and the posterior vaginal vault opened by a free transverse incision. The vaginal mucosa is reflected backward, and the finger is inserted to outline the abscess. The pus is usually easily located and the abscess may be opened with pointed scissors and the opening enlarged by spreading the blades. Whatever may be the nature of the abscess; whether extra or intra-peritoneal, tubal or tubo- ovarian; in order to permit efficient drainage it should always be freely opened.

Pressure upon the abdomen will aid in expelling the pus. Anesthesia should now be pushed to complete muscular relaxation, and careful search made for other points of fluctuation, and if found they should be treated in the manner outlined. Having

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emptied the abscess, the cavity is packed with twenty per cent. iodoform gauze. I like iodoform not so much for its so-called antiseptic properties, but because it is an admirable stimulant to the healing process. The physiological action of iodoform is still *sub judice*. This much we know, however, that free iodine is liberated, which promptly enters the circulation in the form of an albuminate which is a very unstable product. I am inclined to believe that in this form it readily combines with the body juices or defensive lysins, especially in the vicinity of the wound and materially assists their bacteriolytic action. The gauze should be left *in situ* for forty-eight hours or longer. Much difficulty is sometimes experienced in keeping the opening patulous, especially in tubal affections. The cavity must close from above downward, and the incision must be kept open until this is accomplished. Repacking may necessitate anesthesia. Pryor of New York, Robb of Cleveland, and others, have treated early pelvic infection by incision into Douglas' cul-de-sac, thereby evacuating any fluid that may be present, after which the utero-rectal space is completely filled with iodoform gauze. Up to the time of the publication of his article in April, 1903, Robb had treated ten cases by this method. In 8 of the cases fluid was found in the cul-de-sac; in one of which 800 C. C. were evacuated. In 40 percent of the cases the fluid was of a purulent nature. This treatment protects the peritoneum while purulent matter is escaping from the tubes. However, it can certainly have but little influence upon the pyogenic process either in the tubes or cellular tissue. The practice of massageing the tubes in order to expel the pus into the uterus, is to say the least, applicable in but few cases, and is laden with danger even in the hands of an expert.

Under no circumstances, except perhaps to secure drainage in acute general peritonitis, should the abdomen be opened during the acute febrile stage of salpingitis or pyosalpinx. Indeed, many primary attacks of gonorrheal salpingitis entirely recover without operation. The ostium abdominale becomes sealed up and the pus finally drains into the uterus. The question of hysterectomy for septic perotinitis is still a mooted one. I am convinced however, that an early hysterectomy can save some of those highly virulent and rapidly fatal cases; but to be successful it must be done early; before the defenses of the organisms have yielded too much to the invading host. For this operation the vaginal route should be chosen, since it can be done more rapidly and with much less shock to the system. Hysterectomy secures abundant drainage, a very important factor in ridding the system of toxines. Like that of drug poisoning, the pathogenic toxines affect the organism in direct ratio to the amount absorbed.

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Single abscess of the uterus has been successfully treated (Geo. H. Noble) by incision, curage and cautery of the abscess through an abdominal incision. Cases in which the uterus is honeycombed with abscesses, admits of but one course, that of total hysterectomy.

Summing up our present knowledge of the treatment of pus in the pelvis, I beg to offer the following conclusions: 1. When pus exists outside the peritoneal cavity, it should be attacked when possible, through an extra-peritoneal incision. Such abscesses readily heal after incision and drainage. 2. Abscess of the tube or tube and ovary combined, are intractable in healing after simple incision and drainage, and are prone to relapse. By such procedure, the immediate mortality may be lessened, but the morbidity is certainly increased. Total ablation is therefore better surgery. 3. Whether the pus is sterile or not, drainage should follow operations in which the peritoneum has been soiled with pus. 4. When vaginal incision is practiced, it must be thorough. Mere puncturing or aspirating the abscess, are historic relics of surgical impropriety.

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ADNEXAL INFECTION

C. S. JAMES, M. D., CENTERVILLE, IOWA.

(Non Suppurative).

On receiving the program of the State Medical Society I noted that there were two other numbers on the program in this section referable to this subject, both treating on the suppurative varieties, therefore I have elected to re-arrange my paper and limit its scope to those forms of adnexal infection which are more frequently manifested, and non suppurative in character, leaving the suppurative varieties and suppurative stages of the forms considered to be presented by Doctors Stoner and McLaughlin.

The non suppurative varieties are the earlier forms of infection of the uterine adnexa, and are primarily responsible for many, if not a major portion, of the extended pathological conditions, including tubo-ovarian and broad ligament involvement, demonstratable at the time of operation, and a study of the infection of any one of the uterine adnexa necessitates a study of general pelvic infection, by reason of the closest etiological relationship to a similar infection of a part, or all other parts involved in a pelvic infection.

Infection of the Fallopian tubes are frequent, and aside from neoplasms, which are rare, and malformations, which are still more rare, cause, either directly or indirectly, practically all the diseased conditions which in those structures demand the attention of the physician. Zweifel has shown that in only about 4 percent of all cases of inflammation of the adnexa does pus form, therefore, in by far the larger number of these cases of uterine adnexal inflammation are non suppurative, and thus the importance of this phase of the subject immediately appears.

The permanent scientic classification of these affections is as yet not definitely or clearly defined, being based as they now are upon macroscopic findings at the time of operation, and not upon their etiological factors, as would no doubt be more logical. However, the concensus of opinion among modern and advanced authorities today, I believe rather hold to the infectious origin of not only the more generally recognized suppurative conditions, as pyosalpinx of gonococcic or septic origin, but also as

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applied to salpingitis—either catarrhal, acute or chronic, hydrosalpinx, oöphoritis—acute or chronic, and likewise, many cases of hemotosalpinx as well.

"A careful study of the causes of inflammation of the adnexa," says Clark, "has established the fact that it is never an idiopathic process, the mechanical and chemical factors (exclusive of bacterial toxins) seldom play a causative role, and that the prime factors in the production of surgical inflammation are of bacterial origin. The various inflammatory changes, regardless of this mode of origin, start first as a simple salpingitis. This condition may very quickly merge into either the purulent or hemorrhagic types, but so far as the primary pathological phenomena are concerned, the classic signs of inflammation—heat, redness, pain and tumefaction, are present, as well as the vascular injection, the transmigration of leucocytes, increase in round-celled infiltration, and swelling of the epithelium and all the characteristic histological changes of acute inflammation."

With the increase in length and thickness of the tube from these morbid changes, it becomes kinked and twisted upon itself, because of the non relaxation of the mesosalpinx, and thus it is thrown into a distorted shape.

The mucosa is greatly increased in thickness, and in the acute stages of the inflammation, morbid changes may be confined entirely to the epithelial lining and the underlying connective tissue stroma, constituting endosalpingitis. From this stage on, the course and termination of inflammation depends upon a number of conditions, such as the variety of infecting organisms, the strength of their virulence, and the local resistance of the tissues. If resolution does not occur in this acute stage, the inflammatory process tends to become chronic, when the extent and general characteristics of the pathological lesions may become most diversified. With the continued action of the irritating agent the acute inflammatory stage merges into a chronic condition and the marked involvement of the muscular portion of the tube occurs, increasing the distortion and rendering the tubes stiff and less flexible than normal.

Plastic lymph may be thrown out about the tube, which organizes and forms adhesions of varying density to the neighboring viscera, with closure of the fimbriated end by gradual adhesions of the peritoneal edges, or invagination within the tube. And depending upon the character of the infection, and the other factors incident, may we have a subsidence of the inflammatoy process, a hydrosalpinx of varying form, tubo-ovarian cyst, or pyosalpinx and tubo-ovarian abscess.

Symptoms of adnexal infections are many and varied. These attacks may come on soon, or late, after a yellowish leucorrhea

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accompanied by dysuria; or a prolonged or difficult labor; during convalescence, or soon after, typhoid fever, miscarriage, a cold caught while menstruating; or some minor gynecologic operation, or office intra-uterine manipulation—such as violent examination, the use of unclean sounds for diagnostic purposes and the cervical dilator for the purpose of curing sterility. Menstruation is usually irregular, painful and profuse; the change in the character of the menstruation, whether as to time or quantity, and dysmenorrhea coming on in women who have previously menstruated painlessly, are symptoms of much value in early adnexal disease, especially in those of gonorrheal origin. Frequent symptoms are, back-ache, head-ache, dragging sensation within the pelvis with pelvic pain—the latter being increased by jarring, walking over uneven surfaces, buggy-riding, vaginal injection, coitus, or any violent exertion. This pain may be in one or both ovarian regions, and is of a stabbing, throbbing character.

Local pain or discomfort, however, in the affected part, does not always correspond with the seriousness of the infection. There may be only a dull acute sensation of burning, not sufficient to impress the patient seriously, unless aggravated by local pressure, and yet the tube may be markedly distended.

The symptoms of salpingitis are largely accentuated by the virulence and extent of the peritonitis. The less virulent the infecting agent and the greater the resisting power of the various anatomic structure it encounters, the more limited is the extent of the morbid process and the less severe will be the general and local effects upon the organism.

To a large extent the suffering of the patient is due to mechanical causes, for with greatly dilated and swollen tubes rapidly acquired, with no adaptation of the tissues to the stretching, we would naturally expect intense pain, particularly if the adjacent pelvic tissue is inflamed.

In many cases of pelvic disease satisfactory diagnosis requires careful examination under anesthesia, relaxing the abnormal muscles and lessening the necessity for violence, thus conserving the safety of the patient and permitting a satisfactory diagnosis. Every element, subjective and objective, must be taken into account, and unless the diagnosis is positive, or in cases of grave exhaustion or threatening rupture of an abscess, observation during a few days, or, if necessary, weeks, must be insisted upon. Such observation is best carried out with the patient in bed — the temperature, pulse, and character of exudate being carefuly noted in the mantim.

The trained and careful physician may be of great service in the early stages of pelvic inflammation, as good medical judg-

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ment is necessary to determine upon the proper measures to pursue in the presence of pelvic exudate previous to and during early suppuration, for conservative non operative treatment yields good results in a major number of cases of acute or chronic non suppurative inflammation of the uterine adnexa, and in suppurative inflammation is deserving of trial unless definite symptoms make operation imperative. For acute salpingitis and ovaritis it consists of absolute rest in bed; after the first diagnostic examination further examination should be avoided, or be very carefully conducted; local treatment is not to be done during the most acute stages. Pain is often relieved by ice bags, hot sand bags or hot water bottles; narcotics are only to be used with the greatest of caution. Rectal accumulation avoided by from three to six movements daily by means of salines; pulse and temperature are closely watched for the indications for early operation. With the subsidence of the most acute symptoms, local treatment is begun—continuing the heat to the abdomen, hot hip or sitz bath for ten minutes every night, vaginal douching with hot water, followed by tamponade with cotton soaked with 10 to 20 percent ichthyol and boro glyceride solution in glycerine. The hot vaginal douches are best introduced through a hard rubber tubular or return flow retention speculum—the patient in recumbent posture. Care must be exercised that the skin is not touched by the hot water; otherwise, the patient's preference as to temperature may lessen the efficiency of the treatment. One or two gallons of water should be applied daily, so as to last 10 to 15 minutes. Water is heated to 105° F. and gradually increased to 118° to 120° F., provided the reaction of the vaginal mucosa is not too great.

The treatment of pyosalpinx or ovarian abscess is much the same as for salpingitis or ovaritis—the patient being kept in bed longer, and the time for necessary operation must be closely watched.

Conservative operative treatment of pelvic infection is very thoroughly described by J. O. Polak (American Gynecology, Nov., 1903), whose method of procedure is a modification of Pryor's Iodin treatment, and reviewed by Dudley and Healy as follows: In brief, the steps of the operation are modified in the individual case, depending on the extent of involvement. In acute endometritis with adnexal invasion the patient is placed in Trendellenburg lithotomy position, and the uterus is carefully curetted with the finger, or curette, as indicated by the character of the infection; cavity irrigated with hot normal salt solution, dried, and a 30 grain iodoform pencil introduced. The uterus is then pulled down with vulsellum applied to the posterior lip of the cervix, cul-de-sac broadly opened, entering the periton-

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eum. The uterus, tubes and ovaries are freed from all adhesions, free fluid in the cul-de-sac evacuated, and pus pockets, if present, entered and emptied. Thickened or tumefied tubes are brought down into the vaginal incision and exercised for an inch or more along their dorsal surface, the membrane sponged dry, and the lumen of the tube packed with a narrow strip of 20 percent iodoform gauze and the tube raised to its proper plane in the pelvis and held in this position with loose rolls of iodoform gauze, which are placed in the cul-de-sac below the tubes. This places the uterus in a position of anteversion. If, after being freed from adhesions, the tubes show no evidence of thickening, suppuration or tumefaction, they are raised in the pelvis with gauze rolls and left alone. If no adhesions are encountered, as in virulent streptococcic infection, the pelvic peritoneum is dried and the cul-de-sac loosely filled with dry iodoform gauze. This prevents the further absorption of toxins through the pouch of Douglas and sterilizes the contiguous structures by the liberation of free iodin. The gauze is left in position for four or five days, and on removal the cavity is not irrigated nor repacked, as any manipulation, however gentle, will disturb the delicate adhesions and defeat the purpose of operation. By using care in the removal of the gauze the uterus and tubes maintain their proper pelvic position and are held there by the lymph shell until absorption and organization of the large protective lymph mass has taken place. Soon after gauze has been removed the patient should assume a semi recumbent posture, and vaginal douching of saturated boric acid solution at 120° F. are given daily to cleanse the vagina and favor the absorption of the protective exudate.

These conservative tendencies are commendable, and without doubt when faithfully carried out, with full attention to all points in treatment, a definite proportion of cases may be carried through their attack without resort to more radical measuses. This is particularly true in many of the earlier inflammatory cases, and it must be remembered that in comparison, acute inflammatory infection of the tubes and ovaries are much less dangerous than that of the vermiform appendix or other abdominal organs, and therefore the patient's life and health are not greatly jeopardized by the less radical policy.

Discussion on the Paper of Dr. James

C. F. Wahrer.—I trust these papers will not go by without a general and full discussion. The necessity for making a differential diagnosis, that the first reader spoke about, is necessary for intelligent treatment. The great difficulty in making the diagnosis so that a proper treatment may be instituted, is

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appreciated by every one here. We have cases like these, where we are aware that our patient is not far from that narrow defile which in good Hawkeye language is called, "between the devil and the deep sea" and the doctor generally is not far away. They are more difficult to treat and good results obtained, than I fear the optimism of the last reader has warranted. Competent gynecological surgeons, who are more frequent at the present day than formerly and more refined methods of diagnosis do place many patients in good condition. But below these competent men are many men less competent who mistreat these cases and I am now speaking of the general practitioner who must treat them. He hauls his drag net over the country and must treat all the fish in it. I want to pay my compliments and respects to that class of practitioners. It is not always well for men who do special work to say naughty things about what the general practitioner does. It is not an unwillingness on his part to refer them to the proper men for treatment but the condition of the patient frequently and other conditions prevent it, and he must treat these cases the best he can. For that class of practitioners — I do not wish to be misunderstood — I would advise a great deal more conservatism than rash treatment. It is easy for men who have large clinics, who are dealing with these cases daily, to treat them intelligently and with fairly good results and it is natural for the class of people I am talking about to go to a clinic of post graduate instructions. This is a post graduate affair. We hear of men who are able to dispose of these cases and those of us who like to rush in where angels fear to tread and out comes the knife. Now, there is no man living who believes in the intelligent use of the knife more than your humble servant and mark it I say "the intelligent use of the knife." But I do not believe in the old dogma that I have heard from the college rostrum, "It is not so dangerous to cut. Cut everything that is soft, saw everything that is hard and tie everything that bleeds." Those of us who are here today that are not as competent to deal with these cases as intelligently as the two essayists have indicated, for those I would plead for conservatism, based on rather a large experience in these matters. I have seen competent surgeons go into the abdomen and also in other cases opening from the vagina, which seems to be perhaps the best course to pursue in the majority of cases, especially if you are not as clear in your diagnosis of pelvic abscess or whatever it may possibly be— and I notice one reader has made a statement distinguishing between pelvic abscess and cellulitis and some of you can do missionary work by telling me what it is. I think it might be the best procedure in the hands of most any one when he

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can not do any better to make an incision and liberate either pus or lymph or whatever there may be to be liberated, if nothing more than a little blood. It has been my fortune to be called into consultation in a case in which a woman was confined in a hospital. For thirteen days the behavior of that woman, clinically, was ideal and on the fourteenth day she had a chill, followed by a temperature of 104° F. and upon examination we found infection of the adnexia. There was no question as to the general diagnosis. As to the differential diagnosis which particular organ, whether the broad ligament, the ovary or the tube or whether all three were involved, was difficult to make out. I do not care who it was that tried, it could not be told without an abdominal incision. By making an incision from below, a drain, from which nothing was obtained but thickened lymph and some blood we made an application of Crede ointments and the hot injections that Dr. James mentioned. This woman is now making a very good and satisfactory recovery. I say apparent because we do not know what will be involved later on. I had a case of a woman who was not ideally confined and whose condition was far from ideal. She was confined in a very small apartment. Her husband admitted previous gonorrhea to me. I did not confine the woman but was called in later. While the girl was clean morally, her own family history was much mixed. The conditions under which she was confined and the dirty, unsanitary condition made it anything but ideal. Poverty prevented this woman from going to the hospital. I could not do very much but assume a masterly inactivity. I do not advocate it, however, but it was all I could do, under the circumstances. This woman, environed so dangerously, made a splendid recovery or apparent recovery with almost nothing but hot vaginal douching and absolute rest.

A. M. Pond.—I wish to heartily commend the papers we have just listened to. The first paper gives us a broad idea of the pathology of pus collections of the pelvis and their origin. In view of the fact that both of these men agree in their conclusions I wish to draw a little conclusion from a remark of my friend Wahrer who has preceded me in the discussion of this article. He gives us the impression that there were members of this association within the state who were anxious to do surgery and were doing it without provocation. I can heartily second that. But, where there is a specific lesion, where there is a micro organism so purulent as the gonococcus at work in the female pelvic cavity I can not understand how any conservatism such as local treatment, is going to be beneficial in such cases. If we have an accumulation of pus in the pelvic cavity, hot water will do much to relieve the immediate condition. I

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heartily endorse the operative procedures advised by both of these gentlemen. In my practice I have made use the last few months of a cautery point that was suggested to me by Dr. Mahl, first finding the point of flucuation by vaginal examination, thrust it clear through the tissue until you get an evacuation of the pus. The second, third and fourth day the opening will be larger than it was the first day and this, in the most dependent operation of the pelvis, gives you most excellent drainage.

Another point I wish to commend in Dr. James' paper was the fact of not making too many examinations. When you have an abscess you have an increased circulation. Bear in mind that the normal genital canal of the female organism is sterile, but that the vulva contains a hot-bed of these micro organisms and the examining finger not infrequently carries them from the vulva. this hot bed of infection, into the bruised tissue. Then it is readily taken up by the circulation. The same way with the dilator, of which the essayist speaks, in an attempt to relieve stenosis of the cervix, if it should come in contact with the vulva, could carry micro organisms in that canal that will give you an enemy. Dr. Wahrer spoke of the Crede ointment. Personally, I can testify that it has done absolutely nothing for me in these cases. I know the literature teems with results, where it has been beneficial. On the strength of that I tried to give it a thorough trial. Possibly the fault lies with me. I do not wish to question the results given to us by the man under whose signatures they have appeared but I have failed to get the results given by Dr. Wahrer.

V. B. Knott.—It seems to me that the papers, as well as the discussion, are scarcely treated as they should. The discussion, as far as it has gone, has been slightly ambiguous. These two papers are being classed and discussed entirely together, making little distinction between them, whereas the first gentleman spoke of pelvic abscess, which indicates an advanced stage of infection in or about the pelvic cavity and must therefore be treated radically and the last gentleman distinctly stated before he started the reading of his paper, that he was dealing with non-suppurative conditions in or about the pelvis. The treatment of the two conditions must be radically different. The conditions themselves are radically different. I believe that Dr. Wahrer or any other man who wants to be considered conservative would not arise in his place and say the way to treat pelvic abscess was "by masterly inactivity." If he did he would be making a serious mistake or be stating something he did not believe.

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DR. WAHRER.—I asked not to be mistaken. I said I did not advocate it.

DR. KNOTT.—That is what I am coming to. You made the statement without qualifying it. You are the man who got me on my feet and you are now responsible for any trouble I come to. I want to take exception to the statement that the diagnosis of these conditions is up in the air and cannot be more or less accurately made. I believe the majority of the men in this room, whether practicing at the cross roads, or in the largest cities, can at once, tell the difference between non-suppurative conditions of the pelvic organs and pelvic abscess. I would hate to think there was a lady or gentleman in this room who could not make such a diagnosis.

If that diagnosis is made it seems to me the subsequent treatment is more or less easy and more or less certain. In the first place we must distinguish between varieties of pelvic infection. Pelvic infection, as a term, means nothing itself. We all know we have, primarily, to distinguish between classes of infection; one of them puerperal, the other gonorrheal. We do not see many cases due to other causes. It happens that the treatment of those two cases must be radically different. I thoroughly agree with Dr. James in his treatment of gonorrheal infection. I think that cases of puerperal infection following operation or labor at term, coming on within a few days, should be treated actively and radically. Having been in a great many pelvic cases of this kind, I have not yet found one in which the pelvic fluid was not infected. One of the gentlemen reports eight out of ten in which the contents of the lower pelvis was purulent or semi-purulent. That has not been my good luck. I believe a history of the case and the person will enable us to get a more or less correct diagnosis in these cases, and that diagnosis having been made, the treatment resolves itself into a comparatively small and simple proposition.

F. B. DORSEY.—My friend Wahrer in speaking of conservatism in relation to the treatment of these separate troubles, evidently failed to distinguish between suppurative and non-suppurative troubles of the pelvis. If we take Dr. James' paper first, it leads up in its conservative method of treatment right up to the suppurative process and the only exception I would take to Dr. James' statement, instead of using the retaining speculum, I would prefer the Sims or its modification because we do not inflict any pain on the patient. When we take the first paper, when we have suppurative conditions to deal with, as was graphically detailed, nothing could be more conservative than the methods advocated by the essayist. As far as being able to diagnose these conditions, I think the man at the country

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cross roads and village is just as capable as the man in large cities. Why he should not adopt the same methods, I am unable to see and unable to know and two more conservative papers on subjects that are so closely allied, it is seldom an opportunity presents itself for us to hear.

G. N. RYAN.—In speaking of the treatment of these cases, especially in the initial stages where the infection has occurred and you see the case soon after the infection there was one point I want to touch on which has not yet been brought out and that is the point of feeding, rectal feeding and placing the patient at rest entirely. I find a great many men do not follow this treatment strictly but they give their patients water or a little liquid diet and you notice very soon afterwards an increase in the temperature. In treating appendicitis or pelvic infections and all the inflammatory conditions of the abdomen I place the patient on rectal feeding. I use a liquid peptenoid with a saline solution, placed not far enough back to touch the seat of defecation. Four inches back in the rectum you strike the nerves of defecation which expel the food afterwards and you have to use opium in some form to get the bowel to retain the food, but if you throw the food just inside of the sphincter the bowel will retain the food and it will be absorbed. If you talk to your nurses you will find out that in the use of egg, whiskey and a lot of conglomeration, thrown into the bowel in the form of a rectal food, will be expelled and there will be an odor to it and the bowel will not absorb it.. If you use the liquid pepenoids with the salt solution every five hours you will find there will be little, if any, of it expelled and use the salt solution, an ounce thrown into the bowel every hour or two to relieve thirst you will be surprised at the result. I am heartily in favor of the ice pack early in a case. You can treat patients from five to ten days without absolutely anything in the stomach. Often times when the pain is very severe at first I use a stomach tube to wash the stomach thoroughly and give a hypodermic of morphine or atropin, if the pain is very severe and after that I do not have to use any opiate whatever. I do not think this rectal feeding ought to be overlooked. It can be used by the man at the cross roads as well as the city.

C. E. RUTH.—I was very much pleased indeed that I heard Dr. James' paper especially along the line of inactivity or rather rest and a postponement of operative procedures in the acute non-suppurative infective stages. There is no question but what a very large proportion of the gonorrheal infections and the puerperal ones, will recover without the formation of pus and without any operation at all and they should be given a chance to do it. The same law holds good with this that does

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in dealing with inflammation about the appendix, although the danger to life is much greater with the trouble about the appendix and also the uncertainty as to the course it will take. It is very much greater in inflammatory conditions about the appendix than the adnexa.

In all of these cases of acute infection of the adnexa in the early stages, before the pus is formed, if we undertake to operate radically, we will serve no good purpose. In operative procedure we will increase and extend the adhesions, if the patient lives, while damaging or destroying organs that might functionate satisfactory and we will certainly have a great mortality.

I was much pleased to hear Dr. Ryan's mention of the matter of rectal feeding. I am not pleased so much with the statement of the use of the liquid peptenoids, unless we are after the alcohol in them. Of course I do use the peptenoids. You must remember that they are forty per cent. alcohol. I will state that it has no nourishing capacity, aside from that but to limit our rectal feeding to that is a mistake. There are other foods that can be used without causing any more irritations than these and certainly will give as much nourishment.

W. J. Findley.—I am very glad indeed to hear this conservative talk indulged in today. Two years ago we did not hear it.

A. P. Stoner.—I hope I have not been misunderstood in advising radical measures. On the contrary I want it distinctly understood that I am conservative in all of these operations. You must remember that my paper dealt with pus collections in the female pelvic cavity. I am conservative in treating those collections of pus in the female pelvic cavity by removing them by total ablation, take them out, take everything out that is involved. On the other hand, if I were to treat or advise treating pelvic inflammation, whether it should be in the tubes or the ovaries or in the cellular tissue, nothing can be better than rest in bed, but when pus forms once it must be evacuated or should be at the earliest possible moment. Sometimes pus accumulations become absorbed. Is it policy to wait until this occurs? I say no. Dr. Wahrer, who first discussed this paper, asked me to define pelvic cellulitis. I think the doctor was certainly joking. I would simply refer him to any of the modern text books and even old Dr. Skein's work of several years ago, will describe it. Dudley or Montgomery will also give you all of the information necessary. It is simply inflammation of the cellular tissues and follows up the blood vessels sometimes to a remote organ, to remote portions of the body. Skein has referred to cases where abscesses have followed along the cel-

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lular tissue until they have ruptured into the lungs and into other organs remote from the place whence they began.

C. S. JAMES.—I wish to thank you for the free discussion of the non-suppurative form of this disease. In the criticism Dr. Knott states that he meets with no difficulty in the diagnosis or at least that inference was given and Dr. Wahrer makes the statement in mentioning his case that he did meet with difficulty; I will state that I had thought that oftentimes we meet with great difficulty in determining the exact class of infection and to what particular etiological factor our infection is due, depending largely on the difficulty in securing a perfect history of the case. Likewise do I believe if we can secure a perfect history of that individual's development and pathological condition, we can then arrive at a very definite conclusion as to the particular etiological factor, whether gonococcic or puerperal infection, and if so, what particular form or character exists. It is more difficult than we sometimes want to confess to our patient to simply, by manual examination, determine exactly what the character of that mass is in the right, left or both sides. It may be one of eight or ten different conditions that are difficult to diagnose between and particularly if we are not able to get a clear and perfect history of the case it is often almost impossible, without observing the case through an interval. Let me insist upon one point in those cases and that is rest. Rest will save more cases than abdominal ablation, if used early, because a small percentage only come to the suppurative stage.

In regard to the self-retaining speculum I will refer the doctor to my paper in which I did not use the term self-retaining but a retention speculum, meaning a speculum that would have a tendency to slightly back up the flow and in that way lessen the freedom of the exit of the water and increase the size of the hot water bottle. That is all. I think that rest practically sums up the major element of benefit in these cases, non-operative in their character, and is, by the way, one of the most difficult procedures to secure on the part of the patient. They will seldom stand for it because it means weeks, oftentimes, in bed.

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ABDOMINAL WOUND CLOSURE

J. LYNN CRAWFORD, A. B., M. D., CEDAR RAPIDS, IOWA.

In this day of active surgery, particularly in and about the abdomen, the surgeon is inclined to devote his entire energy to careful and accurate finish of every detail of the work inside, and give the proper closure of the wound his too slight consideration.

The fatigue of arduous procedures, with the desire to bring them quickly to a close, may in a measure be responsible for his using methods of wound-closure that are inadequate to meet the essentials of perfectly closed wounds. Or, the methods being essentially adequate, fail in some point through faulty application. Or, perhaps he labors convinced that his methods are those which have produced wound calamities, suppuration, hernia, and homely scars to a minimum.

The essentials of an ideal wound-closure are, accurate approximation and restoration of each layer of severed structure, peritoneum, muscle, facia, fat and skin, separately, by means which insure permanently their utility, particularly that of the facia, upon which depends mainly the strength of the abdominal wall, without suppuration, without homely scar, and without subsequent hernia.

Perfect wound-closure is only possible in the presence of as nearly absolute surgical cleanliness as modern surgical methods afford. For, hernia more often follows the suppurating wound than any other, and of course the unsightly cicatrice is incident to the suppuration. At the same time suppuration can occur in spite of the most rigid surgical cleanliness from too tightly drawn sutures. The blood supply of the tissues impaired by tight sutures, lessens their resistance against the ever present bacterium and an abscees is the result. Suppuration may also occur in the clot filling a dead space. Bleeding must be absolutely controlled.

Next to the all important fascia closure, that of the skin carries greatest weight, mainly from an aesthetic standpoint. That the only actual external evidence of the surgeon's work, no matter how brilliant the result from the operation itself, is an irregular, unsightly blotch bordered by two rows of stitch holes,

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seems to me to reflect unfavorably on him who does it. Women particularly compare their scars.

The following is a description of a method of wound-closure which meets more of the requirements of a perfect one, with fewest wound calamities, than any with which I am familiar. I claim no originality in it, having learned the prnciples of the method from my teacher and friend, Dr. Charles P. Noble, of Philadelphia, and this chronicle is to give my experience in its employment.

As an example of an abdominal incision to be closed take a median one through the rectus muscle. (Surely nowadays no one thinks of going through the Linea Alba). The peritoneum is caught at intervals along its free cut margin with haemostats and held up by means of these by an assistant while it is tightly closed with a continuous No. 1 cat gut suture. (The cat gut I prepare myself by the Cumol method and am confident there are none more reliable. The method I append). Before the next step of the closure the subcutaneous fat is cleaned from the fascia for a space of half an inch wide along one cut margin, while the fascia itself is separated for an equal space from the muscle along the opposite margin.

The next suture, of No. 2 chromicized cat gut, is passed through the fascia and muscle below the angle of the incision, out into the bottom of the wound, leaving a free end, at the point of entrance, secured by a haemostat. The muscle is then whipped through and through lightly with the same suture, bringing its separated fibers into accurate but gentle coaptation, until the other angle of the wound is reached. Here the needle is passed up through the fascia again and the suture secured by an extra turn above the angle so that subsequent tension on the same suture will not increase the tension on that part of it already used to close the muscle.

At this point begins the most important part of the closure, the actual and accurate restoration of the fascia. This, I maintain, cannot be accomplished with any degree of certainty by the old methods of "through and through" suture. The above described chromicized suture thus secured at the angle is now used to close the fascia. The needle is passed in and out on the surface of the fascia freed from fat, taking a bite of about three-sixteenths of an inch, after the manner of a Lembert suture, the needle emerging very near the cut margin of the fascia. The suture is then carried across the incision and passed through the fascia on the opposite side (that previously prepared by separation from the muscle), from within out, the needle entering at a corresponding point to the point of entrance on the opposite leaf. Then, on tightening the suture, about one-fourth of an

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inch of under surface of the leaf of fascia separated from the muscle is made to lie flat upon the upper surface of the fascia freed from fat. This is continued over and over throughout the entire length of the wound, the loops being placed about three-eighths of a ninch apart. On reaching and passing the lower angle, the suture is secured by an extra turn and knotted securely with the free end which here remained from the start. Thus the muscle and fascia are closed with one suture.

The fact that the leaves of fascia are so lapped over and pasted down like an envelope, affords a stronger union than can possibly be obtained by simple opposition of the cut edges.

And with the old method of through and through suture there could be no assurance at all that even the cut edges had been brought together. In addition to this, one could not be certain that a tag of omentum had not already slipped up into the wound, starting a hernia even before the incision was closed. Also, that tension enough can be applied to a "through and and through" suture to even approximate the cut edges of the fascia without danger of so compromising the blood supply of the fat and skin that suppuration is inevitable, is manifestly impossible.

The peritoneum, muscle and fascia being disposed of, there remain the fat and skin to be closed. This is done with a plain No. 1 cat gut suture placed continuously. Entering just through the true skin at the lower angle of the incision, the suture is carried down through the fat into the bottom of the wound, leaving a free end at the point of entrance to tie to on the return, as in the instance of the chromicized. The suture whips over and over the fat, bringing it together very lightly with four or five turns, obliterating all dead space, until the upper angle is reached. Here the suture is brought out just as at the starting point, through the true skin, rearmed with a smaller needle, and used to close the skin. This is done with what is known as the "intra-cuticular" stitch. The suture is passed from side to side, in a plane parallel to the skin surface, through the deepest layers of the skin itself. Small bites are taken, about three-sixteenths of an inch long and the same distance apart, placing the bites on either side in such a way that the point of entrance of the needle on one side corresponds to the point of exit on the opposite side. So that when the suture is drawn up, the cut skin margins are brought into absolute approximation in a straight line without puckering. When the lower angle of the wound is reached the suture is tied with the end left at the original starting point, and the entire wound-closure is completed. There have been closed five distinct layers of tissue, separately, with three sutures.

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The average time consumed in this method is fifteen minutes; somewhat longer than that required in other methods; but, the disadvantage of the extra time consumed is more than overbalanced by the advantages gained, which are: Certain and absolute approximation of each layer in a way that insures their strong and permanent healing, with a suture material that absorbs, eliminating the "taking out of stitches" so dreaded by almost every patient; a beautiful scar, or practically no scar at all, through the use of the "intra-cuticular" suture, which avoids the bacteria-laden skin layer and eliminates the skin puncture scars of the "through and through" suture.

In fact, in many of the cases, after a time there is so little scar that the unknowing doubt there ever having been an incision through the skin.

I have kept a record of 358 wounds closed after the above described method.

Through 299 of these were performed operations for conditions in the peritoneal cavity. Through the remaining fifty-nine were Alexander-Adams operations and operations on the kidneys.

In the entire number there is no knowledge of a hernia having occurred. And the percentage of rank suppuration is 0.

In nineteen of the 358 there occurred limited suppuration in the fat, not involving the fascia in any way, 5-3 percent, counting as such suppurations, collections of pus from 1 to 5 cc.

Through nine of the nineteen suppurating wounds were performed operations for septic conditions, which may account for the infection. Through the remaining ten "clean" conditions were dealt with and the infection could not be accounted for.

In one instance the chromicized suture became infected and came out, but the fascia had already firmly united.

THE PREPARATION OF CAT GUT BY THE CUMOL METHOD.

The raw cat gut, that imported by Kny-Shearer, in bundles of ten strands, each eleven feet long, is soaked in sulphuric ether for an indefinite time, ten days to two weeks, in order to remove the fat.

Each strang is then cut into four equal lengths, and each length is tied up in a figure 8.

The figure 8's are wrapped in gauze and hung in the hot air oven to dry for two hours at a temperature of 100-oC. This must be done immediately before the sterilization proper in the Cumol, as the gut absorbs moisture readily, and gut sterilized when moist is brittle.

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The dried gut, wrapped in the gauze, is then immersed in the Cumol in a copper vessel closed by a perforated lid, through which perforation a centigrade thermometer passes so that the bulb of the thermometer is covered by the Cumol.

The vessel is then placed in a sand bath and the temperature of the Cumol gradually raised to 160-oC., where it is held for one hour.

Then the gut, still wrapped in the gauze, is again hung in the hot air oven and held at temperature of 85-oC., for eight or ten hours to evaporate the Cumol.

After the Cumol is thoroughly evaporated the gut is placed by means of sterile forceps in sterile test tubes plugged with cotton wool, and is thus preserved for use for an indefinite time.

To chromicize cat gut, it is soaked in ether, as for the plain, and then soaked for eight hours in the following chromicizing solution:

Potassium Bichromate	3.00
Acid Carbolic	20.00
Glycerine	20.00
Water	960.00

Removed from this solution, the gut is stretched on a frame and allowed to dry for ten days, when it is cut in lengths as before and tied in figure 8's and sterilized by the Cumol method, as described.

Gut thus chromicized, I find, will last in tissue, from four to six weeks.

This method of cat gut preparation furnishes a suture and ligature that is absolutely reliable for any purpose.

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On motion the papers read by D. S. Fairchild and J. P. Crawford were discussed together.

UTERINE FIBROID NECESSITATING CESAREAN SECTION

J. P. CRAWFORD, DAVENPORT.

Submucous myomas of the uterus are said to so alter the normal tone of the endomitrium as to preclude conception, and therefore, they little concern us in dealing with this subject. Subserous growths uninfluence pregnancy, except as a possible barrier to delivery when they become engaged, or are of sufficient size to embarrass by their pressure.

The interstitial fibroid masses however, must be looked upon as a constant menace to the safety of the pregnant woman, and especially so if located in the lower segment of the womb. Pregnancy complicated with fibroids of the uterus is fraught with danger to the foetus at first, later to the child and mother, and increases the risks attending the puerperium.

Early on the morning of January 20 I was called by telephone to go across the country some twenty miles to see a woman who had been in labor for forty-eight hours or more. The message stated that there was some obstruction of a serious nature and to come prepared to do what was necessary. I found a woman 42 years of age, the mother of several children in former years. The woman's pains had subsided for the time, and she was sitting up and quite comfortable.

She insisted that there had been no motion for several days, and all symptoms indicated that the life of the child was extinct.

On examination I found a large fibroid growth in the lower segment of the uterus, filling the hollow of the sacrum, completely obstructing the pelvic outlet. It sprang from the right side of the neck and crowded into the broad ligament area on that side, pushing the os uteri over the extreme left so it could be felt close against that margin. It was impossible to pass a finger through the os between the tumor and pelvic caliber. This condition absolutely precluded any attempt to deliver by the vaginal route, even by craneotomy if such method had been desired. Relief was not a matter of choosing

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between methods, for there was nothing left but to deliver by cesarean section.

Having my trained nurse and assistant, Dr. Guldner, with me, and Dr. Johnson, the attending physician, to administer the anesthetic, I placed the patient on the kitchen table in a little farm house, off in the woods and delivered through an abdominal incision. The child was of large size and had been dead for several days as anticipated and in a condition of maceration.

There seemed to be but one rational method of treating the remaining womb with its neoplasm. It would have been a very simple matter to have closed up the incision in the uterus after the "Sänger" technique. This, however, would have left the uterus without proper drainage in this instance, and still in the possession of its fibroid, to require in the immediate future another formidable operation for its removal.

In making a celio-hysterecromy, the modern modified Poro-operation, I was unable to amputate at the cervical neck, as it was obliterated in its expansion about the tumor, so that the amputation was made at the vaginal attachment. This meant the enucleation of the entire uterus with its neoplasm, including the uterine appendages, as well. The Sänger section is much more easily made than a modified Poro-operation, under these circumstances, as the pelvic tissues are very vascular and the anatomy badly distorted by tumor displacements. However these operations can be safely undertaken in the best interest of the patient, by those familiar with the technique of pelvic surgery. This woman made a very charming recovery, suffering less inconvenience than the average lying-in woman after instrumental delivery, being able to sit up in two and one-half weeks, and dispensing with her nurse.

No reflections could be made upon the attending physician in this case, for he had not the opportunity to examine the patient earlier. If the same surgical interference could have been instituted, however, before the child succumbed, it could have been saved as well as the mother, for if the child is viable and in normal condition, it should be preserved by a cesarean delivery.

The sacrifice of a child in this instance, and the nearly tragical outcome in the case of the mother also, suggest to us the desirability of more systematic observation of pregnant women by the family physician during their gestation and prevent or anticipate dangerous crises, otherwise to be overlooked with resulting hazard.

A short report of two other cases may suffice to illustrate still different phases of the disturbances of the integrity and function of the uterus, by the presence of fibroids, in the pregnant uterus.

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A few months ago I was called upon to deliver a woman with instruments, who had been in the throes of labor for over thirty-six hours without further progress than dilitation and engagement of the head. On palpation of the womb, it was found to be studded with very numerous interstitial fibroid masses which had produced sufficient inertia to prevent absolutely the completion of delivery without instrumentation.

In the third case, only two weeks ago, I removed a pure myoma of the uterus by hystereclomy from a woman, who, two months before miscarried at six or eight weeks, and in consequence of which she became alarmingly exsanquinated. The uterus being a very firm myomata throughout, was evidently unable to expand itself to accommodate the increasing growth and demands of the foetus and aborted, a much more fortunate termination than that attending the first case.

No doubt many fibroid wombs precipitate abortions and premature labor, the fact of their presence being unrecognized. On the other hand we have the evidence of many pregnancies and subsequent pregnancies going on to a natural termination with the uterine walls involved with interstitial growths of more than considerable size. Yet these neoplasms should always be looked upon as an element of more or less danger to the foetus and mother in any stage of utero gestation.

Fibroid tumors of the lower segment of the corpus or cervix are rarely found, compared with the interstitial masses about the fundus, and far more serious in their consequences than the growths in the wall higher up. Inoperable malignant neoplasms of the cervix and neck are not uncommon conditions requiring celio-hysterectomes while the fibroid of the lower segment are counted rare. Where these growths cannot be lifted above the brim of the pelvis they become mechanical impediments to delivery, especially so, where they assume such proportions as to fill the hollow of the sacrum, not only closing the outlet but preventing dilitation of the cervix. In all such obstructive cases of fibroid involvement as the one described, there is no safe recourse in effecting delivery and enucleation of the tumor, except by a modified cesarean section.

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THE TREATMENT OF CASES OF PREGNANCY COMPLICATED BY TUMORS OF THE UTERUS

D. S. FAIRCHILD, M. D., DES MOINES, IOWA.

The low mortality following hysterectomy or myomectomy leads us to look with favor upon these operations in all cases of growing or mischief making tumors of the uterus. While we have no doubt as to the course to be pursued under ordinary conditions, we may be left in serious doubt as to what is best to be done when pregnancy exists in connection with tumors of the uterus.

It may be assumed that no surgeon will adopt a course of procedure which will interfere with pregnancy unless he is certain that the woman's life is greatly imperiled. It has been repeatedly observed that women suffering from uterine fibroids have safely passed through the various stages of gestation and labor, while on the other hand, others have after great suffering lost their lives.

The factors involved in the complication of pregnancy with uterine tumors will be chiefly mechanical. The tumor may be so located and of such a size as to wedge into the pelvis and prevent the rise of the organ into the abdominal cavity as gestation advances and give rise to serious pressure symptoms and render some operative procedure imperative. These conditions may occur during the first four months of utro-gestation, this will in fact be the most anxious and uncertain period in the course of the case. Large tumors may take on increased rapidity of growth, which together with the enlarging pregnant uterus may cause dangerous abdominal pressure symptoms.

Tumors in the lower segment of the uterus may become impacted in the pelvis and present insuperable difficulties to the passage of the child at the time of labor. All these difficulties may at first be more apparent than real. On first examination when it is discovered that a tumor complicates pregnancy, it may be concluded that only one of two things will save the patient; either the production of an abortion, or a supra-vaginal

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hysterectomy, but it is finally discovered that gestation passes through its various stages and that delivery is accomplished without serious accident.

Aside from the mechanical difficulties which complicate pregnancy, in tumors of the uterus, there arise questions in relation to the completion of the normal period of gestation. It will be found in some cases that the uterine wall is so occupied by multiple tumors that there is but a very limited area of normal uterine tissue which is capable of physiological development. A case of this kind recently came under my care.

The woman had had several miscarriages at about the third month; the last about three months before she came under my observation. On examination I found a tumor occupying the abdomen to such an extent as to cause distressing pressure symptoms. The right side and median portions of the uterus appeared to be occupied by a hard, resisting body while on the left side a tumor extended about two inches above the level of the umbilicus which on palpation presented the evidences of a cyst.

The patient was said to be three months pregnant. She was suffering from moderate attacks of hemorrhage and some pain; these symptoms indicated that before the full period of gestation was accomplished—if indeed abortion did not occur—the most serious abdominal pressure symptoms would supervene. The woman was extremely anxious to bear a living child. In view of this fact, and with the fear of an abortion and hemorrhage before me, and the danger to the patient if an abortion did not occur, led me to open the abdomen to determine if possible, which could be done in a surgical way to obviate the danger and to increase the chances of a favorable termination of gestation at full term.

It was found that the uterine body was occupied by multiple tumor masses, except about the left horn where normal uterine tissue was advancing in a sac like form well into the abdominal cavity. It was apparent that full term of gestation was improbable and the greatest safety to the patient depended on a supra-vaginal hysterectomy which was performed and with a complete recovery.

In tumor complications there is a great probability of an early termination of gestation especially if a considerable portion of the body of the uterus is occupied by a tumor mass,

If, however, a tumor with a limited point of attachment exists, it may rise into the abdomen with the enlarging organ and give rise to no serious complications at any stage of gestation or at the time of delivery.

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The danger from tumors of the uterus complicating pregnancy is not alone during gestation and labor, but may come after delivery. If the tumor is sub-mucus or interstitial it may interfere with normal contraction of the organ and permit or cause very serious post partem hemorrhage which may be difficult or impossible to control.

Tumors of the uterus complicated with prengnancy sometimes undergo gangrenous or degenerative changes and become a very serious direct menace to life. If these changes should occur during pregnancy, the risk to the patient would no doubt be materially increased.

In view of the fact that any operation on the uterus during pregnancy is almost certainly followed by abortion, the treatment must be either expectant or radical. No absolute rule can be adopted and each case must be considered by itself. While this is true, certain principles must govern the surgeon in the management of the individual case. It is desirable that an early diagnosis of the complication should be made in order to determine the application of the principle involved.

Three courses of procedure may be considered when the case comes under the observation of the physician within the first three or four months of pregnancy.

1st. A conservative course. The frequent observation that pregnancy passes through its various stages to full term and to safe delivery even when the gravest apprehensions were entertained by the medical attendant as to the results leads us to look with favor on an expectant course and wait until the time of delivery is due and if it then becomes apparent that labor cannot be accomplished otherwise, a Cesarian section should be made followed by the removed uterus.

If, however, it becomes apparent that the tumor is of such size and so located that the full term of gestation cannot be reached, and delivery cannot be accomplished an abortion may be produced or a supra vaginal hysterectomy made. The general consensus of professional opinion is that abortion should not be performed in this class of cases for the reason that the danger from hemorrhage and infection is greater than the danger from hysterectomy.

The opinion I have reached based on my own experience, and after an examination of the literature on the subject is, that we should consider but one of two courses, 1st, to allow the patient to go on to full term, or 2nd, to perform a supra-vaginal hysterectomy.

The decision should be reached only after a most careful study of the case, and perhaps after some hesitation and delay.

The conclusion that gestation cannot be completed and

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delivery accomplished may be entirely erroneous as has been repeatedly demonstrated. On the other side is the possible danger of fatal post partem hemorrhage and the danger of degenerative or gangrenous changes in the tumor. These dangers are quite exceptioned but should be taken into consideration. The condition which will warrant an immediate supravaginal hysterectomy is the absolute certainty that the size and location of the tumor or tumors will present insuperable difficulties to the progress of gestation and delivery. The uncertainty in being able to reach this absolute certainty will be a bar to immediate operation in the great majority of cases. If delay is indulged in the question may be settled by the diseased uterus expelling the foetus without interference. The circumstances surrounding the case may aid in determining the course to be pursued. The mother may be extremely desirous of bearing a living child, and after the situation is fully explained to her she may elect to have the pregnancy continue and submit to a Caesearian section and a Porro at the same time. The woman under these circumstances should be instructed that when the time draws near she should place herself under the care of a skillful surgeon and be prepared to remove to a hospital where the most approved conditions can be found for the undertaking of a dangerous operation.

In cases of doubt in the early stages of pregnancy delay may be entertained with a view of determining if the uterus burdened with the tumor may rise into the general abdominal cavity and if this is found to be impossible further delay is unwarranted and a supra-vaginal hysterectomy should be made. This course is much better than to produce an abortion or to wait with the hope of the uterus emptying itself spontaneously on account of the possible hemorrhage and, furthermore, the uterus in this condition of disease invites an operation even if pregnancy did not exist. The sacrifice of the uterus at this time and under these circumstances can therefore be no loss to the woman.

Discussion on the Papers of Drs. Fairchild and Crawford

E. W. Crouse.—I have been exceedingly interested in these papers, not that I have had much experience, but I have had a little that made me sad. In my early experience I found some of the difficulties that Dr. Crawford has warned the inexperienced operator upon. I had a patient with a large fibroid that I attempted to remove. The patient was not pregnant but a few months before the attempted removal she had a very bad fall and had a hemorrhage from it and then had a cyst which

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we supposed to be pus or something of the kind, at the time of the operation and which proved to be low down in the pelvis. I had as good assistance as I could secure anywhere but it was my bad fortune to lose this patient, not at the time of the operation, but a few hours afterwards. I have seen two or three cases where the fibroid was accompanied by pregnancy and where the woman aborted about the third month and had no excessive hemorrhage. One of them lived for fifteen years afterwards with the tumor — and that was some time ago when there were not many doctors making hysterectomies for tumors — and after the fifteen years she had the tumor removed. There was difficulty in removing the uterus, with a large tumor and pregnancy also existing at the time. I noticed that the doctor performing the operation sweat a good deal — he did not sweat blood but he came nearly doing it in an operation of some hours in length. This case had some other complications besides.

I remember of seeing one with a fibroid complication and after miscarriage we removed the tumor which was sub-mucous, successfully. I think that Dr. Fairchild has stated the true position, either keep the patient under close watch during her confinement or if it is found that she is in great danger every day to perform the hysterectomy to save the life of the patient. I have known of two who have lost their lives, one of them I saw before death and the other I did not see. In trying to deliver the child, at full term, with the fibroid situated low, one of the patients died during labor and the other one two or three days following same. I am glad to have listened to these two papers and congratulate the two gentlemen upon their presentation of them.

Wm. Jepson.—I think it is very fortunate that we have had these two papers presented to us at this time in the manner that we have. In listening to the paper of Dr. Fairchild, with very due regard to the manner that it has been presented, I conceived the idea that possibly we ought to transpose the title and say, "Fibroid Tumors Complicated by Pregnancy;" in other words, looking upon the fibroid growth, of course, existing during the pregnancy and it being the condition which gives rise to the serious disturbance. We must recognize then that every woman, as has been stated in the papers, who is so unfortunate as to suffer from fibroids and becoming pregnant, is certainly in a grave condition, because of the fact; first, that she is liable to miscarriage, and that in the miscarriage or abortion she is liable to infection and that infection, in her instance, may be very grave. Second, she is liable to have an attack of severe hemorrhage, at the time or later, if she should be fortunate enough to go to termination.

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In speaking of these classes of cases, from the standpoint of treatment, I think we must divide them into two classes, one of which includes those wherein fibroid growths, by reason of the accentuated circulation which the uterus receives through pregnancy it develops so rapidly as to encroach on the room at its disposal as to necessitate an operation before the termination of the pregnancy.

Second, where this appears before the viability of the child. The second class means in other words, the child is viable at the time that serious condition is discovered.

The first class then will raise the serious question of allowing the woman to go on with safety to the termination of her pregnancy. I doubt it. The majority of those cases probably must be subject to hysterectomy. On the other hand, where the child is viable and yet there exists sufficient room at the disposal of the growing uterus we may just as well go on and permit the effort to continued growth of the child, until such a time as we shall elect to let nature make the attempt to expel it, if the growth is not so placed as to prevent it or to do the "cesarean section" as was done in the instance mentioned by Dr. Crawford. It was unfortunate in that instance that the case could not have been recognized sufficiently early to have saved the child. I think we must not censure the country practitioner altogether because of the fact that these cases are not always recognized sufficiently early that they can have appropriate treatment because the majority of women in their pregnancy let the condition go on and on and the practitioner is called in too late to institute these ideal operative procedures which otherwise would be carried out.

C. T. Wahrer.—Before the gentlemen get up to repel the attacks made upon them, may I suggest a question? Shall we operate on every pregnant woman with a fibroid? That involves another question, will not our treatment be modified by the probable size of the fibroid? That is, I mean at the termination of the pregnancy? Could not the pregnancy go to natural termination when there is only a small fibroid present?

J. P. Crawford.—I think Dr. Wahrer's questions are pretty thoroughly discussed in the papers. I think that both writers stated clearly in many cases where there were multiple fibroids, especially in the fundus, it is not inconsistent with pregnancy that it go clear through in safety to the end. I think while the size of the fibroid has very much to do as to our fears of the ultimate result, yet the location of the fibroid has more to do with it than the size.

Any considerable size in the hollow of the sacral mass causes very serious apprehension and I think if it is early in the

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period of gestation we would scarcely ever be justified in letting this go without receiving surgical interference in the way of removal of the growth or else a removal of the foetus. I thank you for the very cordial manner in which you have received my paper. I think the other points that have been raised in the discussion belong more properly to Dr. Fairchild's paper.

Dr. Fairchild.—Mr. President, I can see no reason for changing the title of the paper, because it is the foetus that is the immediate developing cause now; the tumor will take care of itself for awhile, no doubt. The tumors, in these cases, will increase in size, because of the enlarged vessels of the uterus and this within itself, without our positive knowledge of growth, will not warrant the undertaking of the operative procedure on general principles.

But, if we find a tumor is growing, then the operation should, no doubt, be performed. In a majority of cases miscarriage will not take place, it will go on to full term. There have been many cases where physicians have supposed and believed, after very careful examination, that pregnancy could not be complete and yet it has been allowed to go on because of the patient's unwillingness to submit to an operation, until the full and complete term of gestation.

There has been a good deal of literature presented recently on the subject and almost all of the writers on the subject, who have had large experience, contend that abortion should not be performed. I am opposed to the idea of producing abortions, unless in very isolated cases. If anything should be done in the first three months and that is the period when we have the greatest degree of anxiety, then the uterus, with the contending foetus should be removed by supravaginal hysterectomy. I do not believe that is the same practice. I think Dr. Jepson, in his statement, regards the danger of infection occurring. What is the objection to this course of procedure? I do one of two things; either remove the uterus with the tumor or let the case go on and watch the course of it and see how it terminates, because so many of them have terminated fortunately for all parties concerned and we should let the case go on until very serious danger signals begin to manifest themselves.

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A PLEA FOR CONSERTATIVE OPERATION ON THE OVARIES, FROM A NEUROTIC STANDPOINT, WITH REPORT OF CASES

J. W. COKENOWER, M. D., DES MOINES, IOWA.

The subject of ovarian neurosis is one of the most difficult the gynaecologist has to deal with today because of his inability to fix a standard from which to determine the beginning of surgical treatment; hence the question is diagnosis rather than surgery, and the thing to decide is whether the woman's symptoms arise directly or indirectly from pelvic disease. This decided, the treatment is simplified but should the pelvic disease not enter into the case further than one of many other factors, then it is not a surgical case and should be treated accordingly, and it is this very factor which complicates the subject and has given discredit to legitimate surgery and brought to view the shining light of the operator, while the conscientious surgeon prevents damage to the patient and injury to his profession.

It is the purpose of the writer to emphasize the importance of a better knowledge on the subject of diagnosing such cases and point out the mistakes likely to occur in doing so, because no class of patients suffer more or longer with less prospect of relief than do these. They are fully convinced that, directly or indirectly, all their grief emanates from the pelvis and oftentimes this idea is fostered and materially augmented by their friends. The headache, backache, and tired feeling combined with pain in the iliac regions are considered indications of pelvic disease, but when these symptoms are accompanied with disordered menstruation, dysmenorrhea and leucorrhea, then there is no doubt about the diagnosis, especially if some kind friend or thoughtless doctor confirms their opinion.

The real cause frequently originates from abortions, gonorrhea, endemetritis and pelvic inflammations which keep up an irritable condition of the ovaries and the woman suffers for years, and it is no wonder she is willing to resort to any means that will promise relief. However, the all important question arises in all such cases as to whether surgery is an advantage or disadvantage, or whether it will do the patient harm or good? Opinions of leading gynaecologists differ on this point, although

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the bulk of authority is against the assumption that pelvic disease is the cause, but result of neurosis.

The intimate relationship existing between diseased conditions of the reproductive organs of the female and functional disturbance and organic changes in other parts of the body should be better understood, also that fermentation and putrefaction within the intestinal canal will produce auto-infection and intoxication will produce ptomains and leucomains which are the most prolific and common cause of nervous disease. We should know that excretions retained within the body, as well as waste tissue, are absorbed and bring about pathological changes in the blood, which in turn cause malnutrition of nerve centers and thereby materially interfere with and abridge healthy functions in all the vital organs.

Other causes than pelvic disease, may operate to produce this abnormal nervous condition we must admit, and the functional disturbances within the pelvis may be the effect and not the cause of the pathological state, is equally true.

Many surgical procedures, heretofore undertaken with confidence, have been sadly disappointing, and have utterly failed to relieve the condition for which they were advised. The neurasthenia and functional disturbances have remained and both patient and surgeon have lived to regret the treatment adopted. Many operations which a few years ago were very popular with the profession for the relief of supposed ovarian nervous troubles, have grown in disfavor and are now seldom done which ought to teach us all an important lesson to not be chasing after fads, hobbies and phantom neuro-psychosis, but to a broader and more comprehensive view of the subject and be less radical and more conservative in our treatment of such cases.

A few gynaecologists condemn cophorectomy in neuroses and deny the existence of genital neurasthenia. This is, in my opinion, an extreme view of the subject, and is as injudicious, in the face of clinical fact, as are the teachings of those who report such large numbers of these patients as cured by the removal of the ovaries.

The experience of Leibmeister and Baldy coincide so nearly with mine, that I quote, in abstract, from remarks made by them on the subject: "On the one side we often see extremely nervous women, in whom the anatomical and functional conditions of their sexual organs are normal, and on the other hand, all sorts of diseases of the sexual organs may occur, without the presence of nervous disturbances. Neurotic cases cured by local gynaecological treatment are rare. Many cases are cured in whom the sexual organs remain unchanged. The conclusion then must be that neurotic cases are rare that are wholly de-

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pendent upon disease or abnormalities of their sexual organs and yet it is equally true that abnormal irritation of the same functions are conditions especially fitted to cause nervous manifestations."

The writer began five years ago to examine the right ovary in all cases of appendectomy in women and was surprised to seldom find a normal ovary, from an anatomical standpoint, but many cystic ones and in some, diffused edema. A few conservative operations were done on such ovaries with negative results and now the ovary is removed or dropped back unmolested, unless prolapsed or congested, then suspension should be done.

Statistical reports of the surgical and non-surgical aspect of ovarian neurosis does not convince the writer that either extreme should be adhered to and that an intermediate position is preferred between the two extremes, not laying down any specific rules to be governed by but judge each case on its own merits.

During the past year, several cases have come under my profesisonal care or saw in consultation, that conservative operations on the ovaries had been performed with negative results and now they seek a secondary operation for relief. I will report two of such cases which have occurred in my own practice and two were from other physicians.

Case I. Jan. 6, 1901, Mrs. B., aged 35; good family history; examination showed she was suffering from metritis and prolapsed and diseased ovary; had severe pain in loin and back of head which had existed for months without intermission, producing a general hyperanesthesia of the nervous system, insomnia, loss of appetite and emaciation. I put her to bed using local and constitutional remedies for four weeks without satisfactory results. February 16th I removed the diseased ovary and she had an uninterrupted convalescence. Her nervous troubles seemed relieved for a few weeks but gradually returned in an aggravated form, in fact, hysterical, and two years after the operation, I saw her again and symptoms were unchanged. I advised her to try medical treatment a few weeks again, and if the results were not satisfactory, that she should have another operation and womb and right ovary removed; my advice was not carried out and I have not seen her since.

Discussion on the Paper of Dr. Cokenower

F. A. Ely, Des Moines.—Dr. Cokenower has brought out a few points which has come close to me in this matter of ovarian neurosis. He brought out one point; that in many in-

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stances the neurotic condition is the cause of the pelvic manifestation. The pendulum, happily, has swung backward from its former condition or position with reference to oöpphoectomy for the cure of neurosis. I think I can say truthfully that the average surgeon is infinitely more conservative in this matter than he was in years previous. We all know the failure that has come when it has been attempted to cure cystoma by this means. The results are practically *nil* and the same thing is true of the neurosis. The one point to be mentioned and that is, how many of these cases have profound hysterical tendencies. What is the reason that many of these oöpphorectomies are beneficial? It is because your hysterical symptoms are walled up in one corner. It is not the removal of the ovary, but if you have centered that patient's mind on the ovary and then removed the ovary, you have brought about a mental suggestion which is more beneficial to the patient than anything else that can be done. I don't mean to say that I am advising the removal of the ovary. I am taking the opposite position. An incision into the abdomen would do just as good if plenty of stress is put upon that incision, and consequently I am very glad to have that point brought out. I am also glad to have the point brought out with reference to pelvic manifestations as a result of general neuresthenic conditions. I think these points are worthy of consideration. I do not believe there is any bright minded surgeon who will take exceptions to the paper as a whole although they may think possibly the doctor was a little bit critical along that line. I wish to commend the paper.

T. J. Murphy.—If this had been strictly a nervous disease section, — as I am not a specialist in nerve diseases — I would have refrained from entering into this discusison. I think this is the proper section to discuss this subject. In the general practice we are often besieged by a class of patients with many troubles and when we about get exhausted in our patience, we refer many of them to the surgeon.

I believe that this is throwing a great deal of responsibility on the surgeon and that he may discharge this responsibility properly, he must know a good deal about these functional nervous diseases. These troubles whether the symptoms refer to the ovaries or elsewhere have a common basis—that is, the basis is the same. We have a great many of them in every community who get into a sensitive state of mind over some thing; it may be an announcement from the physician that such and such a patient is suffering from pelvic trouble or it may be something else, but in this sensitive condition of mind the patient is prone to make a study of their symptoms and they then find their condition due directly to the ovaries and ovarian trouble

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is the outcome. These patients are referred to the surgeon and many of these patients, especially in the younger class, can be relieved by proper advice and right here let me say that I think the medical profession is responsible, in their zeal to find some trouble which they can relieve, for a good deal of harm. For instance these patients are told they have kidney trouble or something else and their attention is at once directed to that point and the statement of the physician only exaggerates the importance of the symptoms in the sensitive mind of the patient. Many of these patients the surgeon has to deal with because he is the last resort. I think the medical profession generally, and the surgeon especially, should become familiar with the symptoms presented in these cases. These symptoms are very general or indefinite, as Dr. Cokenower has pointed out and within themselves should be sufficient to direct the attention to the possibility of a mental basis of their trouble. Neuresthenia or hysteria is a bad diagnosis but you must have it in mind in dealing with women. If you have made a careful examination and have eliminated all organic causes, and you come down to this functional trouble, I say this class of cases, if the physician is tactful, many of them can be cured, for a time, at least. The cure is simple. The physician must be sympathetic in these cases; he must state to them they have no serious organic trouble; examine them again and put them on the right track; tell them they are getting better and after a while those patients are restored to health and in many instances you will find a class of patients that will be quite profitable to you and I know many of them are the most grateful patients that we have. They will also do us much good in the community. In this class of patients, a great many of them can be cured, if taken in early life. Of course, some of these patients, after they become older and have gone through the hands of a great many physicians and have had their worst fears confirmed, and they are not so impressionable, are not to be cured so easily.

D. S. Fairchild.—The responsibility of the surgeon in the past has been great for the many misdemeanors he has committed in this line, but the responsibility does not lie entirely with the surgeon; the neurologists have something to confess. They have referred cases to the surgeon for operation that never should have gone to the surgeon and the surgeon has been obliged either to do the operation or refuse it — and I fear he has often operated.

I have one case which I would like to speak of, a woman with hysterical mania that occurred during her menstrual period, covering a period of ten days. This patient became uncontrollable. She had been in two insane asylums for this difficulty and the medical staff of the insane hospital said she should be

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operated upon, her ovaries removed, and the patient insisted that that be done. In a moment of weakness I consented to do it. I removed the ovaries, the tubes and the uterus. All was gotten out of the pelvis that could be gotten out and the patient got along well. She did nicely for two or three months and she is now in the insane asylum again. (Laughter.) That is the history of a great many of these cases. I believe unless we can find some actual pathology of the ovaries or the uterus requiring an operation, we should let them alone. I believe these cases of floating kidneys so often associated with neuresthenia or neuresthenic conditions should be let alone, unless it is shown that the kidney itself is giving rise to some degree of distress and not operate upon them for the purpose of curing nervous symptoms but for the purpose of curing disease. I do not believe an operation to the ovary will do any good whatever unless there is some actual pathology in the structure and while I have a good many sins to account for and confess in the past I think I shall have fewer in the future, in this direction.

C. S. JAMES.—I think Dr. Cokenower's paper has sounded the keynote of truth in regard to this matter, that it is a question of diagnosis. I do not think we should censure the operation or the operator. I think as Dr. Fairchild has well pointed out that oftentimes these operations are very closely indicated by reason of the physical phenomena at the time of menstruation. Likewise has he pointed out to us a case that has utterly failed where all of the most positive indications for operation undoubtedly were present. I recently had connection with a case where a woman was advised by a prominent operator to have her ovaries removed. The case had been under my observation for ten or twelve years and I had made repeated examinations. I was at a loss at any time to find anything wrong with the ovarian tube or the uterus. This case was a highly organized, nervous individual and presented all of the physical phenomena we oftentimes have in hysteria. But my connection was suddenly terminated with the case because of the fact I refused to get up one morning at three o'clock and visit her when she was dying. (Laughter).

She left me and went under the services of another doctor and steadily lost in weight under her restricted diet, manipulations, etc. Low and behold she recently returned home, perfectly well and sound and told she had been to Chicago, to a Christian Scientist. (Laughter).

DR. MASON.—There came a case under my observation not long ago, a lady suffering with a neurotic condition and her

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physician advised her to have an ovariectomy, for the supposed pathological condition of the ovaries.

The operation was performed and in a few months she was back to the old condition, hysterical as ever and worse, it may be, than she ever had been before. I merely refer to this to carry out the idea of the essayist that there is a pathological condition of the ovaries before an operation is performed.

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SECTION MATERIA MEDICA

FRIDAY, MAY 20. AFTERNOON SESSION

Report of Committee on Dubuque County Memorial

Society called to order at 1:30 P. M., Friday, May 20, 1904, by President Scroggs.

PRES. SCROGGS.—This is the time set for the report of the committee upon the memorial from Dubuque. Is the committee ready to report?

G. G. COTTAM, ROCK RAPIDS.—As chairman selected by the committee I present the following report:

Mr. President and Members:

Your committee appointed to investigate and report upon the memorial presented by certain members from Dubuque county, relative to the reorganization of this Society at Sioux City last year, begs to state that it has given this matter the careful and impartial attention it deserves, has listened to the views of several gentlemen from the unreorganized counties and from those where disaffection exists, has examined the papers and records involved and as a result of these deliberations desires to offer the following deductions:

First. We realize the difficulties accompanying so radical a change as the complete reorganization of a large society and that such could be made with strict adherence to parliamentary usage and absolute fealty to established precedent is not to be expected under the circumstances surrounding the change.

Second. We find that, while the number of members present and voting at Sioux City on the question of the approval of the report of the committee on constitution and by-laws was small, we find no evidence of irregularity. The matter came up at the proper time as announced in the program and was therefore in the regular order of business. A quorum was present and the motion to approve the comimttee's report was carried unanimously.

Third. The constitution and by-laws adopted by the approval of the committee report is doubtless defective in many details, but in principle we believe to be admirably adapted to the needs of the society. Such defects as have already been found to exist and such as appear in the course of experience can readily be eliminated by the house of delegates. We are informed that a number of such changes is now being made by that body and that

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the interests of the Society at large can be safely intrusted to it is vouched for by its very representative composition and the personnel of its members.

Fourth. The very satisfactory increase of membership since its adoption, the Society now numbering over fourteen hundred as compared with seven hundred under the old constitution, warrants the belief that the plan is on a successful basis. Having secured an adequate membership there is no question that the house of delegates can and will adopt such changes and new measures as will prove acceptable to the greatest number.

Fifth. We recognize the loyalty and high minded motives of those who have come forward with objections to the new constitution and by-laws and the methods by which it was adopted. We believe that the same spirit of loyalty to the best interests of the Society actuates those who fostered the present reorganization movement. We believe that any attribution of ulterior motives to those of either side in this discussion to be absolutely without foundation. All are working with the same object in view; the greatest good to the greatest number. We believe, when all has been said, that there is no real difference of opinion as to the actual conditions present, the only issue is, to determine the best remedy for existing defects. Realizing this, we suggest that all concerned take the broadest and most liberal view possible of the situation and intrust the remedying of details to the body created for that purpose. This will accomplish all that has been asked for by the most radical opponent of the present constitution and as time wears on we feel sure that all will come to see the wisdom of such a course.

D. C. Brockman,
Geo. F. Jenkins,
G. R. Skinner,
A. M. Pond,
G. G. Cottam.

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Upon motion by G. G. Cottam, seconded and carried, each side upon the matter in controversy was allowed one-half hour for a discussion of the same. At the end of the discussion upon motion of D. Macrae, Sr., of Council Bluffs, seconded by J. M. Emmert of Atlantic, that the report of the committee be adopted, by vote, the report was adopted and upon motion, seconded and carried, the regular order of business was carried out, as follows:

ADVANCEMENT IN THERAPEUTICS

DR. TURNER, DES MOINES.

In all branches of knowledge there is continual advancement, and there is always one central and important thought that is being discussed. At the present, in theology it is liberal thought and higher criticism; in education, it is phonetic spelling; in politics it is an "idea"; in surgery it is antiseptics and acepsis; in therapeutics it is specifics, and in bacteriology it is a desire to make discoveries of more of the little demons that are causing so much trouble in the human body.

In the preface of a third edition of Therapeutics published in 1874, is this statement: "In common with all other branches of knowledge, theraupetics has, within the last few years, made rapid strides, and the facts brought to light have been of a very diversified and important character." Further, it says: "Some articles, such as antimony, calomel and blood-letting, have been considerably abridged. By this means space has been rendered available for new matter, and advantage has been taken of it to introduce notice of chloral, sandalwood oil, apomorphia and other new remedies, together with extended notice of other medicines which, though not strictly new, have acquired increased importance from their claims as therapeutic agents, havinly only of late years been fully recognized ;such, for example, as bromide of potassium, carbolic and sulphurous acids and permanganate of potash."

If the therapeutist of thirty years ago could see such rapid strides in the development of *those* remedies to apply in the art of healing, what would he say if he were revising his book today? In every branch of the medical profession there has been during the past few years great advancement. Many, however,

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have ventured the statement that therapeutics is backward, and not keeping pace with surgery or pathology. To this we enter a strong denial. The therapeutist is often quite successful in treating diseases empirically that the pathologist has as yet been unable to identify. As to surgery, we make obeisance to chloroform, ether, cocaine, antisepsis and asepsis; but by the side of them we would place serum-therapy, organo-therapy and electro-therapy.

Not only is therapeutics making as rapid advancement as any other branch of our profession, but it is the most important branch, because it is universally used. The most skilled operator applies therapeutical measures to promote good results in his operations, and I think it would be safe to assert that a bungling therapeutist is a greater menace to society than a bungling surgeon.

Therapeutics is not only advancing, but is becoming more scientific. Since we have learned the germ theory of disease we can apply our remedies with as much accuracy in many cases as a surgeon can apply the knife.

While a number of new and valuable *drugs* have been placed at our disposal during the last few years, the greatest advancement has been in organo-, serum- and electro-therapeutics. The oldest medical manuscript in existence, the "Papyrus Ebers," makes mention of animal extracts as a therapeutic measure. Extract of human heart has been given for epilepsy; extract of human brain has been given for disorders of the brain and nervous system. It was not until a later date, however, that anything like a scientific application was made of them. In 1869 Brown-Sequard advocated internal secretions of glands and tissues, claiming that all cells of the body manufactured specific soluble products entering the blood, and exercised an important if not necessary influence on other cells. Insufficiency of that function in any organ would produce disorders, and could only be remedied by supplying it from similar gland structures. The benefit derived from many of the experiments along these lines led to scientific investigation. Many experiments were made on the lower animals of removing different glands and observing the effect. It was observed that conditions following removal of certain glands were similar to pathological conditions found in the body; and they reasoned that the pathological conditions were caused by affections of those glands. Further research produced extracts of those glands, which when administered produced many beneficial results.

It is fair to say, however, that some persons are making extravagant claims for these extracts that have not been verified by clinical experience.

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The best results have been obtained from thyroid extract in cretinism and myxoedema, and many children thus affected have been saved from an early death or a life of hopeless idiocy. Statistics show that above ninety percent of the cases treated with thyroid extract are improved, and a very large per cent. completely cured. Considering that this condition was hopeless prior to the use of thyroid treatment, the results are little less than marvelous. Many other affections have been treated with thyroid extract — goitre, insanity and several skin affections, — with varying results.

Supra-renal extract is also claiming considerable notice at present, but not sufficient has been learned to know what place it will occupy in therapeutics. As a therapeutic agent in Addison's disease it has been a disappointment, but has been successfully used as a vaso-constrictor and has proven one of the most rapid cardiac tonics we possess. Some have used it with success in asthma, and one of our local physicians used it with success in retention of urine from stricture. After several unsuccessful attempts to pass a catheter he injected through the catheter onto the stricture a solution of adrenalin chloride. In a short time the stricture relaxed and urine was voided without difficulty. Thymus extract has been used with success in treatment of goiter, and extract of pituitary gland has been used in the treatment of acromegalia.

Serum-therapy depends upon the fundamental fact that a group of body cells have a way of rising to the emergency when compelled to defend themselves against a group of foreign cells, and of producing in excess, substances antagonistic to such foreign cells or to their products. It has been developed in little more than a decade. In December, 1890, Behring and Kitasato published their experiments, which demonstrated that it was possible to inject the toxines of a disease into an animal in gradually increasing doses until a condition was reached when there would be no recation. They further demonstrated that the blood of this animal, when injected into other animals, rendered the latter immune. It was not until 1893 that anti-toxin was used on diphtheria patients in Berlin. In 1894, at the Congress at Buda-Pesth, Roox gave a report of three hundred cases treated in Paris with most excellent results, and caused great interest in the medical profession throughout the world.

The mortality rate prior to and subsequent to the use of anti-toxin is so striking that it leaves no doubt that we have a specific for diphtheria. Reports just prior to the use of anti-toxin show a death rate of forty per cent. Reports for the first few years following show a mortality of but sixteen per cent, — a difference of twenty-four percent in favor of anti-toxin. Many

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of the later reports show a much smaller per cent. than those mentioned, and when administered early in the disease the mortality is almost nil.

Serums have been prepared for many other diseases with varied results. In sveral diseases its utility has been well established. Rabies, when treated by the Pasteur treatment, shows a very low mortality. Out of 13,817 patients treated in one institution, there was a mortality of only one-half per cent. Another report of 1,367 cases treated showed a mortality of 6.6 per cent. Allowance must be made in these reports for many that were not true cases of rabies. This, however, is not a true serum, but an emulsion of the cords of animals that have been rendered immune. Nor is it claimed that it relieves after the disease has manifested itself, but if given several days previous it renders patients immune, and no rabies develop.

Tetanus, which showed a death rate of seventy-five to ninety per cent. prior to the use of anti-toxin, shows a death rate with anti-toxin and anti-septic treatment of thirty to forty per cent.

Other serums that have been used with some favorable results are snakebite, bubonic plague, dysentery, typhoid, cholera, anthrax and scarlet fever. Not all the serums that have been used have proven potent; among them pneumococcus and steptococcus serum; also that serum from which he had hoped to get most favorable results — tuberculin.

Serum as a prophylatic measure is quite as important as a curative remedy. Since the introduction of vaccination by Jenner in 1798, which is the only serum that has a respectable antiquity, the mortality in smallpox has been reduced from above fifty per cent. to one-half of one per cent. where vaccination is properly carried out. And Marson shows by elaborate statistics that the death risk from smallpox in the unvaccinated is as 70 to 1 after the best vaccination. What is so strikingly true of prophylaxis in small pox is in a measure true of a number of other diseases. The typhoid serum as a prophylactic measure has some beautiful statistics to its record. Wright reported in the British Medical Journal (1901), 2,669 uninoculated and 720 inoculated soldiers. Of the uninoculated sixty-eight contracted typhoid, and of the inoculated only one contracted it. In October, 1903, he made a later report in which he gives a report from the British army in India. Of the uninoculated, 1 1-3 per cent. had typhoid; of the inoculated two-thirds of one percent. had typhoid. The death rate among the uninoculated was six times as great as in the inoculated. The same results were shown by a report from the British army in South Africa.

The use of serum in the prevention of bubonic plague is most interesting. Previous to the serum-therapy the death rate

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in bubonic plague was seventy to eighty percent. Since the use of serum-therapy the mortality rate is fifteen to twenty per cent.; and in several instances alarming epidemics have been entirely stamped out in a very short time by the prophylatic use of the serum. Haffkin reports an epidemic of plague which broke out in the Umerkadi jail, where were 127 uninoculated persons, among whom were ten cases of plague with six deaths. Of 147 inoculated persons in the same jail, only three took the disease, and there were no deaths.

Serums of cholera, scarlet fever and other diseases have been experimented with, and show good results. The serums are also proving a very essential feature in diagnosis.

The results obtained in electro-therapeutics have been no less interesting than those in serum and organo-therapy. Since Finsen published his first paper on the value of actinic rays, in 1894, the advancement in photo-therapy and radio-therapy has gone forward until a new era has been introduced in treatment of many affections. The literature on the subject, however, is reports of individual cases, and it is difficult to collect statistics from. Remarkable results have been reported on treatment of cancer, lupus, rodent ulcers and other affections. A report of fifty-five cases of carcinoma of the skin, treated by radio-therapy shows complete recovery in twenty-five cases and improvement in a number of others. The Cancer Research committee of England made a report July 30, 1903, from which we quote the following:

"The results obtained by treating rodent ulcer with X-rays are confirmatory of previous experience. Rodent ulcer had been found to be much more amenable to treatment than the other forms of malignant growth. The general consensus of opinion is that many superficial rodent ulcers, even if very extensive and of long standing, can be made to heal completely by the X-rays alone. Recurrence occurs in from twenty to forty per cent of the cases, but *they* are, as a rule, as amenable to treatment as the primary condition.

"Complete healing was obtained in 141 of 216 cases on which we have detailed reports, a proportion of sixty-five per cent. As a majority of the cases are so extensive as to be inoperable, or had already been excised and recurred, this high percentage of success is very satisfactory. Of the remaining cases, improvement was recorded in forty-three, no benefit to sixteen, and aggravation in three instances. The resulting scar is described as soft, pliable, and of the same color as normal skin, occasionally darker or lighter."

The Cancer Research committee does not find the good results in treatment of carcinoma and sarcoma that have been re-

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ported by some investigators, but regard the treatment of the disease as open to further research.

Another therapeutic measure that has been attracting a great deal of attention during the past few years is aero-therapeutics; and while we failed to get the results we had hoped for in the treatment of tuberculosis with tuberculin, there is promise that we will be able to make its ravages much less by aero-therapeutics, which consist in an almost constant outdoor existence, — if not out of doors, in rooms open to the free passage of air and the admisison of as much sunlight as possible. Temperature is a secondary consideration. Fresh air, first, last and all the time is the program. This, with dietetic treatment, has proven most beneficial in sanatoriums where the regime could be properly carried out. By this plan of treatment at Davos-Platz, Switzerland, Turban reported 408 cases of tuberculosis treated by himself. One-half were in the second stages and one-fourth each in the first and third stages. Of this number, sixty-six per cent. were discharged absolutely or relatively cured. Williams reported 247 cases; of this number forty-one per cent. were cured, thirty per cent. greatly benefited, and twelve per cent. improved.

At the sanatorium at Rutland, Mass., a report of seventy-two per cent. were cured or arrested in incipient cases, and forty-eight per cent. of cures, taking all cases, and forty-three per cent. improved.

Other *new* remedies, and some which we have learned better how to apply in order to get best results, are oxygen, rest cure, hydrotherapy and psycho-therapy. With these remedies, many of which have proven to be specifics, we are better equipped to fight the battle against disease than ever before, and we expect in the not distant future to see such perfection in therapeutics that empiricism will be unknown.

Discussion on the Paper of Dr. Turner

F. J. Murphy.—In the therapeutical line we have made some progress but I believe we will find slow progress has been made along the line of the legitimate goods, but not along the line of proprietary medicines. The man who has a formula for every case is the man who is up to date. I think we at the present time, should give thanks for coming down to specific conditions and in my opinion the good doctor is the man who uses the single remedy in most instances and that is some of the later remedies. Coming down to advanced therapeutics we are being transferred from the field of empirical therapeutics into the field of rational therapeutics. Empirical therapeutics, of course,

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is the administration of drugs without a reason. The good student is the man who knows the reason and not the man who takes it for granted and the best physician is the man who has a reason for the administration of a given drug. I say we are getting into rational therapeutics very rapidly and those gentlemen who are following the medical end of it can take heart and feel within a few years we are going to get some recognition. Thre will be a time when there will not be three or four papers on medicine and fifteen on surgery and it wont be five years from now. The greatest advances are along the line of antitoxins. The doctor has touched along that point. Along the lins of electricity, I am afraid electricity is more popular than perhaps is justifiable, from the results we are getting. Probably in many instances it is more beneficial to the doctor than to the patient.

J. A. VALENTA.—I think we have made some advancement in therapeutic lines in using drugs more to their specific actions and not using so many proprietary medicines. I think one hindrance to the advancement of therapeutics, it is so much easier to use the proprietary medicines, especially where the physician prescribes and fills his own prescriptions. It is so much easier to take the medicine that are already put up and fill up a bottle with it and let it go at that than it is to take each drug separately and fill it up according to its action.

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A COUNTRY DOCTOR'S MEDICINE CASE

H. C. ESCHBACH.

When my task was cut out for me by the chairman of this section, I found in the bill of specifications the requirement to tell "the six, eight, ten or twelve favorite drugs, or combinations of drugs used in my practice and the reasons for using them."

Being a doctor of the cross-roads type and not up to date on all the more recent discoveries in Materia Medica, as presented to us by the traveling distributor for the various drug and chemical manufacturers, I bethought me to look through my medicine case, which has done duty for me through a number of years, and note what it contained, and note also what I most used and try to tell why, that I might account for the faith that is in me, at least, if not presenting any new discoveries or matter of special edification to the members of this Society.

I was not surprised to find that all it contained, of value, might be carried in a much smaller space, and the source and properties of the various drugs could be found in the U. S. Pharmeacopia.

In enumerating the drugs used most, I do so without reference to their relative importance, but rather as I happen to pick them out from the case.

First I found calomel in 1-4 gr. tablets, a convenient size, in children a half tablet every one-half hour, or hour, till free purgation is induced, in adults, a whole tablet at the same intervals, has helped me in many a case of that Protean aspect of alimentary tract disturbance generally described as "biliousness." It commends itself by its tastelessness and will stay down, if anything will stay down. In addition to its purgative action, it possesses antiphlogistic and antiseptic powers, which are so much needed in these cases, or in fact in any case of auto-infection from disordered alimentary tract secretion, besides its role of an agent that produces "defacation while you wait."

I generally follow its administration in adults with a dose of a saline cathartic.

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The next bottle I pick from my case contains the tablets of aloin strychniae and belladonna or, sometimes a tablet with the addition of ipecac. As a bowel persuader for more regular and continued use in conditions of chronic constipation it has power very satisfactory to me.

The next bottle contains bismuth subnitrate, which I use as an antiseptic, protective, sedative and mild astringent because of its adherent properties, in those cases of irritation and inflammation of the gastric and intestinal tract, simple diarrhoeas of irritation, chronic bowel complaints of children, in pyrosis, the vomiting of pregnancy, catarrhal eructations and in the absence of my surgical case as a surgical dressing in wounds.

Next I find a bottle of Dover's powders, useful as an antipyretic in the febrile conditions of children, as a sedative in the coughs of bronchitis, the early stages of pneumonia and pleurisy, and in the various forms of diarrhoea where a sedative and mild analgesic agent is indicated.

Next I find potassium bromide useful in congestive headaches, in quieting cerebral excitement, when not inflammatory in nature, lessening nervousness, a good adjuvant to chloral in insomnia and delirium tremens, a good sedative in chorea, and one of the most reliable remedies in epilepsy, curing a few cases, ameliorating many, and failing always in some.

Side by side with this drug I find chloral hydrate, the most reliable pure hypnotic yet produced. Always of value in the wakefulness of excitement and nervous irritation and in the wild delirium of the early stages of acute fevers, but to be avoided in the delirium and wakefulness of the dynamic later stages. In puerperal mania, puerperal convulsions and the convulsions of children it is of undoubted value. In case where the stomach is extremely irritable, or where from convulsions the patient is unable to swallow, the remedy may be given, properly diluted, per rectum, remembering always that in concentrated solution it will blister.

Then directly opposite, these last depresso-motors I find the excito-motor parexcellence-strychnia, — both the sulphate and the arseniate. A remedy I value more and more with each successive year of practice. A remedy I use every day, carefully but fearlessly. Use it as a tonic in all conditions of atomy and relaxation, in cases of chorea minor, in many of the paralyses as a stimulant after abuse from alcohol, as a cardiac stimulant; as the best prespiratory stimulant. In pneumonia it is one of the sheet anchors. In the obstinate pulmonic troubles with dilated right heart it is invaluable. It is of great advantage also as an adjuvant to other drugs in the treatment of the coughs of aged

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and feeble subjects. In gastric disorders and constipation and diarrhea, in the various local paralyses it gives tone to the system and in the language of Abbott, "takes up the slack."

Next I find digitalis, the most powerful and most useful of the cardiac tonic. In simple loss of cardiac muscular power, as in simple dilation, digitalis is a powerful corrective; in restoring the normal power and force of the cardiac contractions valcular lesions, it is a most efficient agent. In a heart, where from valvular lesion the rhythm is lost, the action irregular and enfeebled, or in other cases irregular and tumultuous, battering its encasement to the terror and discomfort of its owner, how often have we seen digitalis act as a governor of the engine, slowing up its movements, restoring its rhythm and force, and bringing peace and comfort, where before was terror and agony.

I next find aromatic spirits of ammonia, a most excellent remedy where a quick heart stimulant is needed. The more sudden and purely functional the heart failure may be the more efficacious. In heart failure during anaethesia it is of value given hypodermically, but as its action is evanescent in character it needs the addition of more permanent and enduring remedies to keep up the good effect of its quick action. It is also of use as a stimulant expectorant in the bronchital affections of children and adymanic pulmonary affections. As an antacid in the gastric headaches of acidity it is also useful.

Then we find a bottle of fluid extract of ergot. Needed in cases of obstetrics, but not so generally used postpartum as formerly, and I hope never used antepartum to stimulate a tardy labor. Because first, we have learned that clean empty uterus usually contracts properly after a normal labor and needs no stimulant from ergot "or any other creature," if its cavity is properly emptied and normal bodily conditions prevail to prevet hemorrhage. Second, still less needed in antepartum to bring on pains of labor for expulsion, as the pains it induces are not properly intermittent, but more or less tetanic, violent and prolonged contactions must necessarily interfere with the circulation of the placenta, and therefore with the respiration of the foetus, and a still born child is often the result of antepartum administration of ergot. Quinine or strychnia will give a proper uterine stimulation when needed. But ergot is often needed for postpartum hemmorrhage from uterine atony and when needed is invaluable. I do not pretend to give all the possible uses of ergot, such as its effect on uterine fibroids till such time as operative work will be permitted, or enlarged prostates in old men where its physiological action points to its use, and there are clinical data to point to its efficacy — but its use in connection with obstetrics calls for a place in every physician's case.

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Now comes a bottle of chloroform for use in convulsions of children and adults, purepural eclampsia and wherever a general anaesthetic is required on short notice. No medicine case should be without it.

Here too is a bottle of bichloride tablets for making solutions for antiseptic purposes.

In the space for miscellanies is a hypodermic case containing tablets, tubes of morphia, strychnia, nitrate, atropia, apomorphia, nitroglycerine and digitalin. Here also is a small pocket case of instruments for the minor accident cases we often meet with.

There are a few other bottles with a few other drugs, unnecessary to enumerate and seldom used in my own work, because with those already mentioned, most of the conditions met with can be properly treated until one reaches his base of supplies, the office or drug store, — where the combinations may be made, as indicated for more extended use.

One tablet, however, I wish especially to mention, is the sugar of milk. I have found it of great use where to satisfy the anxiety of a patient, or members of the family, a medicine must be given before I have had time to make a diagnosis. It fills the demands also in cases where medicine is not needed at all, but must be given to satisfy the patient or friends. Again, in a case of appendicitis, while waiting for a favorable period for operation and where medicine by the stomach, or in any other way is much more apt to do harm than good, the patient may be satisfied and carried through the critical period by one-fourth grain tablets of sugar of milk dissolved on the tongue. And its efficacy is often heightened by cautioning the nurse to cut the tablet in two and give but half the amount, being careful to make the division accurately.

I have omitted the mention of a number of drugs I carry in my case, but used more rarely and with much caution for fear of adding to the ravages of the disease the harmful effects of the drug.

In fact, since beginning this paper I have concluded that a much more valuable paper might be written on "What Drugs a Country Doctor Should *Not* Carry in His Medicine Case."

Discussion on the Paper of Dr. Eschbach

M. Bannister.—I think that was a very admirable list. I find there are exactly thirteen remedies in the doctor's case, which he enumerated. I think it was lucky rather than unlucky in this case. I doubt if he could dispense with any of them. I do not think he would need many more. He mentions quinine

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only casually. I rather think the doctor gives some quinine and I would include that in the list, I believe, in the state of Iowa. Other than that I have very little and in fact no criticism to offer for the paper except the one given to the use of the Dover's powders and that was the use we are apt to put it to in the earlier stages of pneumonia and pleurisy. I would prefer during pneumonia and pleurisy to have the pain controllled by the use of the ice bag and not by Dover's powders, which have no curative effect on the case. However, there are cases where we simply have to relieve the pain and in that case an additional dose of Dover's powder might be permissible. I think the paper on the whole is very inclusive and satisfactory. I think we carry too much medicine in our cases. I think we would be better off if we carried fewer and learned our remedies thoroughly.

H. E. W. BARNES.—I am glad to hear such an interest taken in Materia Medica. The house is always crowded when we read a paper on appendicitis. The surgeons have the floor all the time and I am glad to see the regular profession wake up to the fact that we have a Materia Medica system and give evidences of a knowledge of how to use it.

There are many, many good points in the doctor's paper and there are some points we can criticize.

There is one point that I would not criticize him especially on, but that was on the subject of strychnia and the use to which it should be put. I think we are all disposed to do that. I think we have got a little strychnia craze. I may be mistaken and it may be a number in the crowd will jump on to me for it, but in my opinion, we use strychnine too much.

The doctor's criticism on the subject of ergot and where it should be used is open to criticism and his use of the sugar of milk also. I do not think any man ought to do the Homeopathy act and stand up and give sugar of milk until we find out what is the matter. Moreover, I believe if we do not know what is the matter tell them we do not know and say it openly and if they do not want you let them get the other fellow.

DR. GARRICK.—I have no criticism to make on the paper, in general, but there are a few points in connection with the remedies mentioned that I think are worthy to speak of. One of them is with regard to the use of chloral. I have made use of chloral in a few instances, in a manner that I have not seen before and as yet have run into no danger but I would like to know if any one has any knowledge of the danger and that is the giving of chloral hypodermically in convulsions in children, when you cannot succeed by your ordinary methods in controlling them. I have had probably a dozen cases in which I was

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able to control those convulsions by means of a hypodermic of chloral. I carry chloral in five grain tablets. A child a year old I probably give two and one-half grains, two years old, five grains, repeating the dose at intervals if necessary or increasing injection of five grains of chloral in water in the hypodermic syringe. I know it is considered dangerous in children but then so are convulsions considered a dangerous condition. The doctor mentions chloral as one of the remedies he carries and if it is dangerous in the use I have put it to, I should like to know it. The doctor also mentions quinine as a stimulant to uterine contraction, or rather he mentions it as a substitute for ergot. I have, myself, often used it as a stimulant to uterine contraction but I believe I have never given it when I did not believe afterwards I had increased the hemorrhage following labor. It has appeared to me that the quinine has increased the contraction of the uterus and as a consequence increased the hemorrhage following delivery. That has been my experience in every case I have given it and now, while I do give quinine in proper doses to stimulate contraction I do it with great hesitation and use strychnine in preference and I must say in spite of all the condemnation of ergot I do occasionally, when I see there is nothing in the world in the way except a failure of contraction give small doses of ergot, avoiding that spasmodic contraction that comes from large doses. I do not do it often and I wait a long time before I do it but I do give it and I do not believe I have given it to such an extent as to cause bad results but this result from quinine, I have watched for, time and again, and I must say I positively believe that it results in increased hemorrhage following delivery.

My explanation is that it stimulates the pains by the determination of blood to the pelvis and in that way causes the hemorrhage afterwards.

Jos. Knowles.—With reference to the use of stimulants I believe, unless there is something urgently called for the best thing we can do is wait, just curl up and wait. I have been in the practice now nearly thirty-eight years and I have given but little ergot or anything else to increase the force and frequency of the contractions in cases of confinement. I do not do it. I use but little of it at any time. I keep it with me in case I should need it but I very seldom use it. As for a remedy for the control of infantile convulsions the best remedy I have known is the fluid extract of *placa flora incarnati*. Give it in full doses frequently repeated and you will get splendid results from it. If that does not prove satisfactory and there is no irritation of the rectum and you cannot keep your bromides down in the stomach make

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a solution of the bromide of potassium in a little water and put it by injection into the rectum and you will not be long in getting results from your bromide of potassium.

T. J. MURPHY.—I can quite imagine, under some circumstances the promt action of a medicine like chloral is something a doctor would desire in the treatment of convulsions of children or adults, but I cannot say that I have heard of the general use of chloral hypodermically. Chloral is commonly given by the rectum. It is so irritating, both by the mouth and the rectum, it should always be given well diluted. If this is true, it is almost impossible to inject sufficient water with the chloral, with the hypodermic use, to prevent irritation. The common practice where we are hard pressed is to use chloroform for the time being and to give chloral by way of the rectum. With regard to one drug, which I think is valuable and which, I think, while old, is finding use in other than the usual places and that is calomel — the mercurials — and calomel particularly. There was a time when calomel was prescribed in all of those conditions ending with "itis." In other words calomel was used in inflammations generally. I believe that I see, at the present time, a tendency to the recurrence of the use of calomel in the treatment of many diseases or rather many conditions of inflammation. I cannot go into a theoretical discussion of the subject but we find on physiological grounds good reasons for the administration of calomel. In our inflammations we find an excess of fibrine in the blood and calomel diminishes the fibrine in the blood.

C. F. WAHRER.—I want to name two remedies that are worthy of consideration and I am not going to say a word about them either, Mr. President. (Laughter.) I want you all to learn more than you have hitherto about the uses of hydro-primo-hyoscin for one drug and the other is apo-morphine.

H. C. ESBACH.—I think Dr. Barnes' criticism is not good with reference to sugar of milk. Up until four or five years ago I never had a grain of sugar of milk in my medicine case and I did just as he has advised, — when I didn't know anything about the patient I said so and tried to get them to wait until I could make a diagnosis. Some smart fellow who makes diagnoses more promptly than I usually got that case. I presume if Dr. Barnes had been in the neighborhood he would have been one of them and so I learned occasionally to give them sugar of milk. (Laughter.)

DR. BARNES.—No, Doctor, I would not give them sugar of milk.

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SECTION OF OBSTETRICS

THE SURGICAL INDICATIONS IN ECLAMPSIA GRAVIDARUM

REPORT OF CHAIRMAN, A. M. POND, WEBSTER CITY.

Were I to follow a well established precedent, I would bring to the members of the Iowa State Medical Society at this time, a resume of the work of the year along the line of obstetrics. Time would permit me only to pass these important events in a hurried review before you, and allow no time for the careful considerations of some of their merits.

Hence, I have taken one subject, and will present for your consideration: "The Surgical Indications in Eclampsia Gravidarum."

Were we at present able to state positively the cause of eclampsia, the specific and scientific prevention and cure would quite naturally follow. But this we are not at present able to do. We have considered this condition as some result of a perverted metabolism, and have tried to ascertain some reliable data in the laboratory to substantiate this opinion but have failed. We have sought to find the cause as a toxaemia, an auto-infection, or an accumulation in the blood of some toxic agent, and have examined the urine and the faeces for a clue. No doubt we are approaching the truth, but to state positively what this toxic agent is, or from what perverted function we are yet unable to do so.

We do know that the urine and the faeces give us a clue in some cases; in others the eclamptic siezures come like a bolt from a clear sky, and we are impressed that some women can tolerate a much larger dose of this toxic agent than others.

Clinically, we know that eliminative treatment secures the best results in toxaemia incident to pregnancy, and this is usually signalled in by symptoms of kidney failure of a greater or a less degree; and, clinically again, we know that an eliminative treatment which includes the early emptying of the uterus, gives us today the best chance of saving the mother and the child in the presence of an actual eclamptic siezure.

It is with especial reference to this clinically established fact that this paper has to deal.

In 1891 Duhrssen made the positive statement that "in all cases where the defective dilatation attacks only the vaginal por-

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tion of the cervix, and grave danger threatens the mother or child, it is today the duty of every obstetrician who is skilled in diagnosis, technically expert and aseptic, to dilate the cervix as completely by from two to six deep incisions reaching as far as the attachment vagina, and deliver the patient." His conclusions in the application of this mode of delivery to cases of eclampsia, are:

1. That after operation under short but deep anesthesia, during which the uterus is emptied, eclamptic siezures cease in 93.75 per cent. of the cases.

2. The prognosis of operations performed for eclampsia is not greater than the prognosis of gynecological operations performed for diseased conditions other than eclampsia.

3. The prognosis in eclampsia is aggravated by the number of attacks, whether an operation is performed or not. In this connection it must be remembered that there are many instances of death after very few convulsive attacks, but in these cases cerebral hemorrhage or fat emboli of the lungs causes death. And if death can ensue from a few attacks from pulmonary emboli or cerebral hemorrhage, it only shows how dangerous it is to wait and with reason look for prognostic points.

4. Again, when eclampsia occurs in the puerperium, the mortality is little more than nil; hence, when we immediately empty the uterus, in pregnancy of labor, we artificially and at will, put our patient in the same favorable condition that the woman finds herself when eclampsia occurs after delivery.

The positive statements and brilliant results quite naturally have been challenged; perhaps the most exhaustive and valuable for our use, is the article of Charpenteir that appeared in the Bulletin of the Academy of Medicine in Paris. In this article the writer claims that in his study of 454 cases of eclampsia, treated by various methods, he is able to prove:

1. That labor should be waited for and terminated natally whenever possible.

2. That induced labor should be reserved for exceptional cases in which medical treatment has failed.

3. That in all cases the interference should be deferred until the cervix is dilated, or at least dilatable, so as to avoid danger to the mother. That in eclampsis, Caesarian section, manual dilatation of the cervix, and especially deep incisions of the cervix are absolutely unjustifiable, and places himself in resolute opposition to forced labor.

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From the analysis of the 454 cases, which included all known methods of treatment of eclampsia, he gives the following table:

Mortality from spontaneous labor.....	13.93
Mortality from artificial labor.....	29.13
Mortality from Caesarian section.....	36.26
Mortality from forced labor.....	40.75

The infant mortality of the 454 cases was 164, or 36.12 per cent., and he concludes his observation by stating that "the best treatment of eclampsia is to wait until labor begins, and permits it to terminate naturally, unless forced to interfere."

Now we have two men of about equal ability advising exactly the opposite procedure. Each of these men brings to us valuable points. Duhrrsen, on the one hand, advises a bold offensive position, and says, " Wait."

Probably between these two extremes we will find the safest ground.

The bulk of medical opinion expressed upon this subject is decidedly in favor of emptying the uterus in as short a time as possible, whether the attack occurs before or during labor. There is a wide diversity of opinion regarding the means to be employed.

In the second stage of labor, after dilatation is fully complete, all writers are agreed that immediate emptying of the uterus is indicated. This can be accomplished without additional danger to mother or child, but is the barrier to immediate delivery, and right at this point the authorities begin their divergence.

An expectant or palliative treatment means almost certain loss of the child and something like thirty-three per cent. of the mothers perish also, while on the other hand the child is usually saved, and the mother safe, as far as eclampsia is concerned, if the uterus is immediately emptied by surgical means.

Two indications, then, would seem imperative:

1. Control convulsions with chloroform.

2. Empty the uterus, under anaesthesia, by some method that is rapid, and that will cause as little injury to the mother as possible.

These indications can readily be met if cervical dilatation has progressed so that the fingers can complete it, or in the case of multipara, where the cervix is easily dilatable, and where the cervical segment of the uterus can be hastened by manipulation to that degree of obliteration, when the cervical walls become almost if not quite continuous with the vaginal canal; but during pregnancy or at the early part of labor, when the cervix

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is dense and deep, and where no dilatation has begun, the process of securing cervical obliteration is not easily accomplished.

Four procedures are offered for emptying the uterus at this time:

1. Caesarian section.
2. Mechanical dilatation of the cervix.
3. Deep incisions, which at once remove (completely) the barrier of the cervix.
4. Combined mechanical dilatation and deep incisions.

Of these methods the second one, or the mechanical dilatation of the cervix and the immediate extraction of the foetus appears to be the popular method of the day; and, properly performed, the method is safe and efficient.

Before dilatation is well advanced, however, from forty minutes to an hour and a half is necessary to safely carry it out, and certain conditions of the cervix even at this time, may refuse to yield to normal dilatation, or else result in lacerations into the lower uterine segment.

The third, it seems to me, offers us a surgical means for emptying the uterus in from five to ten minutes provided the upper segment of the cervix has disappeared, or the condition of obliteration is complete; and, in some cases where the cervix is still present, at least the supra-vaginal portion of it, the fourth method, or the method of combined incision and manual dilatation is indicated, and rapid emptying of the uterus can readily be obtained. In this method the mechanical dilatation is made use of until the internal os has disappeared, and the dilatation is then completed by incisions of the cervix from the os to the junction of the uterus and the vagina.

THE OPERATION.

It cannot be too strongly insisted upon that the operation should only be undertaken when the entire supra-vaginal portion of the cervix is fully dilated; or the stage of obliteration is complete. It is not indicated where the defective dilatation is confined to the vaginal portion of the cervix, since under these conditions the vaginal portion of the cervix represents more or less thick and broad border of the the external os which arises from around about the vaginal walls. This condition is, as a rule, found in primiparae. In multipara, before the os is well dilated, the narrowest portion of the cervical canal is found above the cervoco-vaginal attachment. In either primiparae or multiparae, when one examines a given case, say in the last week or ten days of gestation — namely, the period which some are pleased to call the preparatory stage of labor — changes in the

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lowest uterine segment and the supra-vaginal portion of the cervix have often proceded so far as to result in the complete obliteration of the later structure, and thus render the conditions suitable for this operation.

When, during pregnancy or labor, the supra-vaginal portion of the cervix has disapeared, or can be made to disappear by appropriate mechanical means, and grave danger threatens mother or child, complete dilatation can be secured by means of from two to six deep incisions, beginning at the os and radiating from the os to the utero vaginal junction, and the uterus emptied immediately.

In case of multipara, where the supra-vaginal portion of the cervix is still present, the mechanical dilation is to be preferred to the bloody dilitation by means of the deep incisions. Moreover, in multiparae the mechanical dilatation will usually suffice. In the presence of immediate danger however, the supra-vaginal portion still being present, the two procedures can be combined with advantage — namely, mechanical dilatation until the os has been obliterated, and dilatation completed in an instant by deep incisions.

By this means, we can accomplish immediate delivery, by natural passages, without danger to mother or child, even when the cervix is present and rigid.

The method has this advantage over the old "accouchment force" — namely, that the obstruction formed is entirely removed before the extraction of the foetus is undertaken, and the foetus is not made to act as a dilator. To make the incisions, usually four will suffice. The free edge of the os is fixed either between the fingers or forceps, and the incisions made with long, straight or angular scissors, or a bistory, care being taken to bring the incisions fully up to the utero-vaginal junction, and right here lies the greatest danger in the operation. If the incisions do not come to the cervico-vaginal junction, the descending head may not be permitted to pass with ease the narrow portion of the canal, and in consequence tears the opening to sufficient size, and this is dangerous, since the tears are but continuations of one or more of the incisions which were made to remove the obstruction. Duhrrsen, Edgar and others, have had this accident, where considerable damage was done to pelvic contents by the laceration caused by the tearing continuation of the deep incisions.

A glance at the surgical anatomy of cervical incisions of the pregnant and parturient cervix, naturally leads us to enquire what risk we run in wounding structures immediately adjacent to the cervico-vaginal junction, such as the uterine artery and its branches, the ureter, the bladder, and peritoneum. Of these

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structures the three last are in least danger of injury, and, in fact, we are scarcely able to do them any harm if we limit our incisions to the utero-vaginal junction.

Yet incisions carelessly made, that, for, instance, include a fold of the vagina with the thin layer of the vaginal cervix, may readily in the posterior incision, open into the Douglas Pouch, and in that of the anterior, cut the utero-vesical pouch or the bladder itself.

The same error in the instance of the lateral incisions, may open a ureter, as the latter passes forward and inward in close relationship with the utero-lateral vaginal wall, to enter the bladder about one inch below and in front of the cervico-vaginal junction.

The uterine artery, or its branches, can only be opened by cutting too deeply beyond the utero-vaginal junction into the lower uterine segment, or by subsequent extension of the incisions by tearing, as mentioned above.

It is quite obvious that if the incisions are complete and extend fully up to the utero-vaginal fold, full dilatation of the os is complete and no further extension by tearing beyond the vaginal attachment will occur.

It is not necessary nor advisable to suture the incisions after operation. Spontaneous union of the cervix usually occurs.

HEMORRHAGE.

There is no great amount of hemorrhage in this operation, if boldly and completely done, there is grave danger, however, as we have observed above, of injuring by tearing, the uterine artery on either side, if the incisions do not divide all tissues to the cervico-vaginal junction, but if dilatation is completed by the incisions obliterating the cervical segment, little or no hemorrhage to speak of, will be encountered.

SEPTIC INFECTION.

Primary septic infection of the deep incisions which would formerly have been justly feared, can today be avoided if you prepare the patient, dressing and yourself in the manner so well known to modern surgery. There are, however, few conditions where faulty technique will show so quickly or bring more fatal results.

Secondary infection from the decomposed debris, can of course, occur, but this danger can be greatly lessened, by remembering that in normal labor the uteric secretions after labor are free from micro-organisms, and that infection invariably occurs from some foreign substance introduced from without.

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Modern obstetric technique does not permit of ascribing the cause of a chill on the third, fourth or fifth day to "taking cold." That statement used to be accepted for its face value, but today it is challenged, and we know that the cause is either a toxaemia due to insufficient bowel activity, or septic infection, and, if after a thorough bowel evacuation the temperature does not decline to normal, we may be reasonably certain that we have a septic infection to combat.

The dangers of this, however, are no greater in the case where the incisions have cleared the way, than it is where the head tears its passage through the cervical segment, nor is it as great, for the clear-cut surface will approximate and unite unaided after delivery, while in the latter instance the mutilated membranes form a hard dense tissue that must be externally removed.

In closing, then, permit me to say that this operation is not one to be freely resorted to. In the vast majority of cases it will be possible to procure the desired result without any operative measures further than mechanical dilatation, but in the instance where the cervical segment cannot be obliterated or where, as in the case of the multipara, the internal os remains rigid, and grave danger threatens mother and child, it certainly does increase our surgical resources in meeting the indications for interference in Eclampsia Gravidarum.

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OBSTETRICAL PRACTICE: THEORETICAL AND ACTUAL

ALBERT ANDERSON, M. D., ESTHERVILLE, IOWA.

Obstetrical practice embraces theoretically the period of gestation, labor, and the puerperium.

I would not discourage the effort to idealize obstetrical practice but contend that actual practice demonstrates the fallacy of attempting such methods.

When I speak of theroetical obstetrics I mean ideal obstetrics, an ideal patient and environments, placing herself in the care of her physician with the beginning of gestation, reporting from time to time during this period, furnishing samples for urinalysis at stated intervals, following carefully all instructions as to exercise and treatment, hygienic, dietetic and medicinal, the employment of a trained nurse and having her in the home previous to labor to carry out all the aseptic details requisite in the preparation of linen and wearing apparel for mother and child, the final preparation of the patient, the disinfection and sterilization of such articles as the accoucheur may require while conducting labor including cold sterile water and normal salt solution and last but not least placing the patient in aseptic linen after proper disinfection following labor, maintaining a rigid asepsis and cleanliness during the puerperium.

This is certainly ideal but the average man in general practice will admit such cases and conditions are extremely rare. As surgeons we know that any break in our aseptic technique means infection, it certainly is not so in obstetrical practice or the race would become extinct from infection of child-bearing women.

Considerable discussion occurs as to the conduct of normal labor. The theoretical obstetrist when called to the theoretical case finds his patient prepared by a bath, in an aseptic bed, sealed up with an aseptic vulvar pad, scrubs and disinfects his hands and arms, puts on an aseptic gown or suit, makes a careful palpation of the abdomen *only* to ascertain the position and presentation of the child, thus determines the progress of labor from time to time and estimates the probable duration, if the conditions warrant administers a litle chloroform with the pains until the woman is ready to deliver, when with aseptic hands

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and napkins the child is guided safely through the vulvar orifice, the placenta is expressed by Crede's method, received in an aseptic vessel and napkin reapplied and the nurse attends to the remainder.

I think my colleagues from the remote districts and back counties will agree with me in classifying this as a beautiful theory.

And I will venture the assertion that not one of us follow or has the opportunity to follow such practice in two per cent. of our cases. On the contrary from thirty to forty per cent. of the cases we confine we have no knowledge of until we receive the call. We find the patient up and dressed in the early stages of labor, or frequently well advanced in the second stage without having removed skirts, underwear, and occasionally the dress. Some neighbor or friend, possibly untrained nurse, has prepared the bed, it may be with clean linen or may not be, depending on the status of the family, the sole object in the preparation of the bed being the protection of the mattress, not patient. Thus are we who practice among the laboring classes introduced to a majority of our cases of labor.

Outside of the larger cities not five per cent. have in attendance a trained nurse, and not twenty per cent. a half trained nurse. The majority of our cases in the small cities, towns and rural districts, have in attendance some friend of middle or advanced age whose mind is filled with the vagaries, whims and superstitions, of generations past gone relative to the process of labor, who might consider "cleanliness next to godliness," but surgical asepsis worse than foolishness. In such conditions and surroundings the great mass of plodding family physicians manage the majority of their labor cases.

And how shall we conduct our labors to minimize the dangers of infection, and avoid fatalities in our obstetrical practice? We soon learn in country practice to adjust ourselves to our working environments in the absence of aseptic preparation and frequently the lack of time to prepare, thus we must depend on the free use of antiseptics, bichloride of mercury, formalin, or carbolic acid, in good strong solution, in any vessel that is clean, use a liquid antiseptic soap bottled. I invariably use synol; give the hands a good scrubbing with a brush, a final alcohol wash and your hands will be as safe for a vaginal examination as for a laparotomy, when necessary to repeat the examination repeat the washing using soap antiseptics and alcohol freely. I confess candidly I have no faith in exclusive abdominal palpation as a method of determining the progress of labor, neither have I any patience with the let alone, do nothing policy of conducting labors. I believe the teaching of Lusk twenty

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years ago still holds good when he said: "There is no sense in reposing a blind unreasoning confidence in the powers of nature, indeed legitimate grounds for interference are liable to arise in the simplest labors, the attitude of the medical attendant should be one of watchful expectancy, he should be ready if needful to assauge pain, to forestall dangers and to limit the duration of suffering."

The followers of Lusk from these few sentences received sufficient inspiration to save thousands of women countless hours of suffering even at the risk of being accused of meddlesome midwifery, a term to which I shall plead guilty for I still proceed after disinfection to examine my case vaginally every hour or two during the first stage of labor and permit no second stage to exceed two hours, if progress is poor, without applying forceps and delivering.

We should never accept or undertake a case of labor if recently in any way connected with any form of general infection such as scarletina and erysipelas or if recently from an operative pus case, when in doubt as to your ability to disinfect your hands use sterile rubber gloves, however I dislike the gloves and if forceps delivery is required they are quite worthless as they are certain to become torn and the grasp is uncertain.

It was my intention to demonstrate in this paper that practice of obstetrics theoretically, presumes the assistance of a trained nurse, that the preparation of the physician for his work is identically the same as that of the surgeon for a capital operation in the home with trained assistants; and that the premise is untenable on account of the lack of such trained assistants in a large per cent. of cases which places obstetrics on the same plane as emergency surgery which simply means that we must be fully equipped to meet the possibilities in surroundings where labor has advanced to such a degree that tedious preparation is not to be thought of. It is no difficult matter to convert your obstetrical satchel into an emergency bag, your forceps and other instruments always sterilized and well wrapped in sterile towels, kept in sterile bags. If necessary to use them wash them finally with a formalin solution and lubricate them with synol or other bottled antiseptic soap, use aseptic tape for the funis put up in envelopes in the same manner as cat gut ligatures, use chromicized cat gut ligatures in sealed tubes for repair of the perineum and never fail after every labor, no matter how simple, to make a careful examination of the perineum, and if any lacerations are found, even trifling, repair them at once without an anaesthetic. I am convinced that most of the infections are due to open wounds in the perineum rather than infection conveyed by the

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surgically prepared finger or hand of the accoucheur in the vagina before such lacerations have occurred.

A half dozen or more surgical towels in sealed aseptic packages as we secure them from reliable firms are a great convenience and occupy little room in the satchel. Use no douches before or after labor unless your untrained nurse or mid-wife has made vaginal examinations before you arrived, if so give a bichloride douche followed by a sterile water douche. Be sure your hands are clean as you are in surgery, and keep your antiseptic solution fresh and at hand; wash them frequently and freely while conducting labor, apply an aseptic napkin when labor is complete, leave bichloride tablets or carbolic acid and explicit instructions with your untrained nurse to never touch the vulvar region without washing her hands in the antiseptic solution and aways use the solution to cleanse these parts; also instruct her as to the sterilization of clothes for dressings in the range-oven, or better yet do it yourself before leaving, look after the antiseptic and aseptic details and rare indeed will be your cases of puerperal fever. The progress of civilization inspires the hope that we may in time educate our clientelle to understand what we mean by asepsis and infection and the necessity of the one to avoid the other. When our patients fully understand these terms then and not until then will we be able to practice ideal obstetrics.

Discussion on the Paper of Dr. Anderson

D. W. Finlayson.—The paper has certainly covered the field very thoroughly. I am quite of the opinion that if the advice given by the essayist is followed, puerperal fever would be almost unknown. Cleansing of the hands as well as preparation for any surgical procedure, having all things in our obstetrical satchel, with all things we may possibly need, so well equipped that we are not required to return to our office or the drug store for more, will put us in a position where we are quite safe as to the interests of our patient. It is very evident that if strictly aseptic and antiseptic methods are pursued from the beginning to the end of every procedure that there will perhaps be no puerperal fever of stretococcus or other infection. I believe when forceps are used they should always be boiled at the time not less than forty minutes under sufficient pressure and heat and then most carefully handled afterwards to prevent contamination. I believe no douche should be used under any circumstances unless we are certain that a case of puerperal infection is present and then we have to do the best we can for our

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patient, especially if it is true septisemia, if it is true streptococcic infection.

One more source of danger comes from the patient herself manipulating the parts, afterwards or just prior to the labor. One other source of danger is the fact that the nurse may be careless in her demeanor and infect the woman, resulting always in severe censure for the physician in charge of the case. It has been my practice to very carefully guard against such chances for infection and carefully instruct the nurse to use nothing but boiled water, always having at hand a sufficient amount of boiled water cooled down, the water having been boiled forty minutes, and I instruct her at all times to keep her finger nails and hands strictly asceptic and be careful that the woman herself does not infect herself. With a most painstaking disinfection of the fingers and the nails and the hands, the wrist and forearm, I think that puerperal fever will be a thing of the past but it is always ready to appear on the first break in our most painstaking technique.

G. G. Cottam.—I want to comment on the paper, in the first place, for the distinction between obstetrics, theoretical and practical. We are sometimes amused at the recommendations we see in our journals, we fellows who have to practice in the country and catch these cases as we can under all conditions and in all sorts of homes. Where we have everything arranged, everything is ready for business, we are cleanly, everything is pure, but we also find an opposite condition where everything is filthy and vice and ignorance abound in all its disagreeableness. We have cases where we do not know what we have to meet until we get there and then find labor well along, too far along to carry out the suggestions we find made.

I want to emphasize, too, the doctor's remark in regard to external palpation in determining the position and progress of labor. I must confess that it requires a good deal finer sense than I possess. We find cases where you might as well attempt to palpate through a bed mattress as the thick abdominal wall that obstructs everything. It is a peculiar thing, too, to us country practitioners, to never find an unhealthy or unpleasant symptom, never have a particle of rise in temperature, never have any odor of decomposition, or have anything unpleasant occur during the period. Do not misunderstand me that I am a disciple of dirt. I cannot even follow the lead of Dr. Robertson, of Chicago, who advocates not taking a bath oftener than three times a year. I believe that we, as practioners, ought to do the best we can and I agree that no instrument should be used until thoroughly boiled. We can do that in any home. We can find some vessels we can sterilize our instruments in,

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if we can have a fire, but the other conditions are beyond our control and yet the statistics I see in the reports of puerperal fever are appalling to me and surprising to me and I cannot understand it. Under all the conditions we have to meet and with so many features under our control, yet, from what I have observed and have heard from my brother practitioners in the country, what they report to me, it seems strange to me this condition is possible.

H. E. W. BARNES.—It seems strange to me in medical societies, when we get into these discussions, hearing doctors speak so disparagingly of the country and lauding to such a high pitch the city. I have had experience in both places, gentlemen. I was born in the country. (Laughter). I have been in some of the worst homes, in some of the most unhygienic environments in town, in big towns and cities, worse than any place I ever saw in any country home in my life, Iowa, Illinois or any other place that I ever practiced medicine. You have dirtier homes and worse homes and everything in worse shape in the towns than in the country. I would rather go out here five miles in the country at a good farm house and attend an obstetrical case right now than to go down here on the flats and attend to a case of the same kind, in the city of Des Moines. Gentlemen, that is just the reason you have this terrific rate of mortality in the cities, a higher rate of mortality than you do in the country. I can fix up an average country home in Iowa so that a woman's chances are better than they are in half of the hospitals. I believe that is right.

I agree with the doctor as to the use of rubber gloves; I am an advocate of the use of rubber gloves in obstetrical practice. I think you can disinfect them quicker than you can the human hand. I also approve of what Dr. Finlayson says about the necessity of precaution to prevent the patient manipulating herself and also the nurse handling the woman improperly. Nine times out of ten the doctor is not to blame for a case of puerperal fever. They go to work and run the thing themselves after delivery and then, if in four or five days there is a chill or fever, the doctor is to blame; there is something the matter with the doctor; he did not do this or do that right.

I approve of what the doctor said about boiling your instruments for forty minutes. When you have a case where you think you are going to use forceps, you can have them boiled while you wait. That is all there is to that. You can boil your instruments while you wait; I do it. I did it just a few days ago, with a patient 35 years old, when I saw what I had to do.

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I do believe we should use bichloride of mercury on the vula in a solution of 7 1-2 gr. to the quart of water. I use nothing else externally. I do not believe in the vaginal injections at all. I think I am as free from sepsis as anybody but I see some cases of it. When you say you do not see some cases of sepsis you are certainly in a peculiar locality or you have a peculiar set of patients because there is sepsis every place and everywhere. We cannot be too cautious and invariably the physician is to blame if sepsis developes.

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DRUGS USEFUL AND USELESS IN OBSTETRICAL PRACTICE

M. J. KENEFICK, ALGONA.

An examination of the transactions of this Society for the past four or five years shows that the papers presented before this section have dwelt largely upon some surgical phase of obstetrical practice.

The successful practice of obstetrics today must be founded upon the principles of modern surgery and it is therefore proper that the surgical aspect of obstetrical practice should receive in our deliberations the time and attention which its importance demands.

Unfortunately the majority of pregnant women do not consult their medical advisor until some complication arises. We should endeavor upon every possible occasion to educate the public on the importance of the pregnant woman reporting early to a competent obstetrician for medical advice.

Thus would many serious complications be avoided. One of the first pathological conditions which brings the pregnant woman to her medical adviser is nausea and vomiting. The drugs which have been recommended in this condition are legion.

You have all tried them and you have all failed to relieve this distressing and often serious complication by the administration of drugs.

Dietetic, hygienic and postural treatment will accomplish much more. Davis of Jefferson Medical says on this point:

"Drugs are of use in the treatment in this complication only in so far as they assist in preserving the patient's strength.

"It is folly to drug a patient with narcotics while the physician is ignorant of the position and condition of the pelvic organs and the prolonged administration of morphia is often simply a mask for negligence and incompetency."

Crockett of the University of Buffalo says: "As a rule, medication addressed to the stomach is beginning at the wrong end of the trouble, a fact well attested by the interminable list of drugs given in the books and handed down through force of habit."

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During the latter months of pregnancy pathological conditions frequently arise calling for medical treatment. The tendency of modern authorities is to look upon the toxicity of the maternal blood and defective elimination as the underlying elements in the production of the most serious diseases of pregnancy.

When an examination of the urine shows albumin or defective elimination of urea here we find a successful field for the use of drugs.

In albuminuria the old solution of Iron and Ammonium Acetate or (Basham's Mixture) has been found very useful.

In all conditions where defective elimination is the apparent cause the old reliable drugs calomel and magnesium sulphate may be classed as most useful.

We come now to the consideration of drugs used during labor. It will be convenient to allude to the drugs commonly employed in the three stages. When spinal cocainization was introduced a few years ago it was believed by some that by the use of this one drug cocain we could dispense with all other drugs in the management of labor but its use is attended by such risk that it will probably never come into general use.

The first condition met with in labor, calling for the use of drugs is, the supposed septic condition of the external genitals of the parturient woman and the hands of nurses and attending obstetrician. In this connection we may write down as useful drugs the antiseptics usually employed in the practice of modern surgery.

It is taken for granted that these very useful drugs are never omitted and are intelligently used.

The next condition calling for the exhibition of drugs is in rigid slowly dilating os. Here we may name chloral and morphia as useful aids. Some obstetricians report success in the treatment of rigid os with use of cocaine and atropine.

Have had no experience with these two drugs in this condition.

My preference is for morphia hypodermically. I firmly believe that the first stage of labor is robbed of much of its terror by the hypodermic use of morphia in 1-4 to 1-3 gr. doses.

Have used it often during the past few years and have never observed any bad results.

Delayed labor from uterine inertia is one of the most annoying conditions calling for the use of drugs. On the drug treatment of uterine inertia, I beg to quote at length from Hirst of the University of Pennsylvania, who says:

"After a period of rest, effective contractions will reappear, even if nothing whatever is done to aid the patient. The more

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complete the rest the more vigorous will be the uterine action when it is resumed, and for this reason the administration of chloral and opium is often followed after a time by a satisfactory progress in labor, but these drugs necessarily retard the termination of labor by the time of rest they secure.

"It is desirable, therefore, to resort to drugs of a stimulant character that shall at once revive the flagging uterus and so hasten the delivery. Many medicaments have been recommended for this purpose, but, of them all, alcohol, quinine, and ergot alone deserve consideration. Ergot was employed extensively at one time but clinical experience forbids its use today. The contractions of the womb induced by ergot are likely to become tetanic. The uninterrupted contractions interfere with the foetal circulation; they may cause fatal intra-uterine asphyxia and they often produce such exaggerated blood pressure and stagnation of the current in the foetal body as to induce extravasations in important viscera, especially the brain.

"Further, the circular fibers of the cervix come under the influence of the drug and by their firm contraction neutralize the contraction of the longitudinal fibers of the uterine body and thus retard labor almost indefinitely; and worst of all, should there be some obstruction to the descent of the child in the maternal pelvis or foetal body the administration of ergot predisposes to rupture of the uterus.

For these sufficient reasons this drug as a stimulant to the uterine muscle in the first and second stages of labor should be banished from the obstetrician's pharmacopeia, except in the single instance of the birth of the second of twins.

"Owing to the recommendations of Albert H. Smith and Fordyce Barker, quinine has had, and still has a great reputation as a stimulant to the uterus in labor. The writer's experience with the drug, however, does not permit him to subscribe to belief in its efficacy as a uterine stimulant in labor. Quinine has the positive disadvantage, moreover, that it will occasionally in certain susceptible individuals produce a violent post partum hemorrhage.

"In the minor grades of inertia under discription so often seen in primiparae, and almost always the result of exhaustion, the writer has found nothing so useful as alcohol, in the shape of a wine glass full of sherry, given with the positive assurance that it will bring back the pains and hasten the conclusion of labor, for the patient needs moral and mental support as much as she requires a physical and muscular stimulus."

Near the close of the second stage or during the perineal stage of labor we find a most useful application for anaesthetics.

Chloroform has long held first place in obstetric anaesthesia.

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Many severe perineal lacerations would be prevented by its judicious use. Against the use of chloroform it has been claimed that it causes relaxation of uterus and thus predisposes to post partem hemorrhage.

I believe this element of danger has been much exaggerated. The same objection holds as a predisposing factor in puerperal sepsis, a relaxed uterus furnishing a favorable avenue for the introduction of infection.

Ether is being used much of late years in obstetrical practice. It is claimed by its advocates that it is a uterine stimulant and thus facilitates instead of delaying the progress of labor.

During and following the third stage ergot is the drug universally used. Many use it as a routine practice. For several years past I have not done this but have been governed by conditions of uterine contractions after expulsion of placenta.

On the use of ergot during the third stage I wish to quote from Jewett who says:

"It is a useful precaution to give half a dram of the fluid extract of ergot at the close of labor if the uterus is not firmly contracted. Its use is proper only after evacuation of placenta, membranes and clots. Its action is most certain when injected sub-cutaneously.

"One or two doses may be left with the patient with instructions that they be taken in the event of flowing too freely. The use of a moderate dose of ergot at the close of labors is not only harmless but is also in keeping with the objects of treatment at this period.

"It limits the danger of hemorrhage and by diminishing the blood supply it promotes involution.

"It closes the gates against infection, guards against the retention of blood clots in the uterine cavity, and therefore loosens the tendency to after pain and to putrid accumulations in the uterus."

When we come to a consideration of the pathology of the puerperium particularly in the treatment of the puerperal infection we are confronted by a long list of useless drugs which I shall not take the time to enumerate.

Antistreptococcic serum much lauded within recent years may be classed among the useless drugs. Williams and John Hopkins mention only four useful drugs in combatting puerperal infection, viz.: Ergot is employed to secure better contraction and thereby acclude to some degree the lymphatics in the uterine walls.

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When local measures fail and we are forced to rely upon general tonic treatment the same authority states that our most potent remedies in this regard are strychnine and alcohol.

He distinctly states that the fever should not be treated with antipyretics.

The subcutaneous infection of sterile normal salt solution has been followed by good results.

Another most serious condition in which drugs have been freely used with poor success is Eclampsia. Here drugs are useful in the preventive treatment and some are still adhered to as curative.

In the preventive treatment those drugs which assist in eliminating toxic materials from the system by improving the action of the bowels, kidneys, liver, skin and lungs may be put down as useful.

Calomel and digitalis hold first place. When we come to the curative treatment of Eclampsia by drugs we are confronted by the most serious condition which we are called upon to treat.

The curative treatment is summarized by Edgar of Cornell University thus:

1. Control convulsions.
2. Empty uterus.
3. Eliminate poison.

For the control of convulsions the four most useful drugs are chloroform, morphine, veratrum viride, and chloral hydrate.

Morphine interferes with the elimination processes and its use in such a condition would therefore seem unscientific.

The elimination of toxic materials from the blood and tissues may be greatly aided by the use of drugs.

Prompt catharsis is secured by croton oil, calomel, or magnesium sulphate. I have seen the use of large quantities of hot saline solution subcutaneously followed by profuse diuresis and diaphonesis. Its use is to be recommended. Edgar says that pilocarpine as a diaphortic in the presence of an eclamptic attack should be utterly rejected because of the danger of oedema of the lungs and glottis which it may produce.

If we were to examine the obstetrical bag of the members of this society I am sure we would find quite a variety of drugs.

The demand of modern obstetrical practice requires a few drugs to be found always in our obstetrical case. If asked to name the six most useful drugs in our obstetrical practice I should give: 1. Chloroform; 2. Ether; 3. Ergot; 4. Morphine; 5. Chloral; 6. Bichloride of Mercury.

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Discussion on the Paper of Dr. Fenefick

J. C. Powers.—I wish to commend heartily the paper, especially what the author has said about the abuse of some of the drugs in obstetrics. I commend what he says about the use of drugs in nausea or in vomiting in pregnancy. I believe that 75 percent of the drugs used in those cases do absolutely no good. I believe the rest in bed, proper hygiene cures most of those cases, providing there is no trouble in the pelvis that can be corrected. If there is any retroversion it goes without saying that should be cured. Rest in bed and rectal feeding does more good than all of the medicines you can put in their stomach.

Ergot is one of the most abused drugs in obstetrical practice. In loking up the matter of ergot, I find in the last pharmacopeia the author says at least fifty or sixty percent of the bottles of ergot standing on our shelves are absolutely inert. They are absolutely useless after standing there eight or nine weeks. I would not imagine any reason why ergot should be given in any case of obstetrics following the third stage, unless the physician wants another call to relieve severe after pains. It simply gets you into trouble. If there is anything in the uterus itself absolutely wrong and you are compelled to, give ergot. The only contingency where ergot should be given in these cases is where involution does not take place readily. I believe it is a good thing to give one dose of ergot only. If you depend on ergot to stop hemorrhage the patient will die before you get the effect of it, if you give it by mouth. I do not believe any man can depend on ergot to stop a case of post partum hemorrhage. If he has kept his hands on the fundus of the uterus, following the third stage, whether he has used chloroform or not, he will not have post partum hemorrhage. Therefore, I say that ergot is a much abused and useless drug in the practice of obstetrics.

Quinine I believe to be one of the good drugs in the practice of obstetrics. Some objections have been raised to it by some patients but that may be raised with regard to any medicine, quinine as well, in any patient. It is always best to tell the patient why you are giving them the medicine.

I have found that quinine produces contractions, not like ergot, it does not produce a violent contraction, but simply stimulates a normal contraction. In cases of delayed labor you will find that quinine does stimulate contractions. I believe the author mentioned, but did not lay much stress on the use of normal salt solution in some of these cases. It has been my misfortune to have three cases of pneumoccocic infection the last year. In those cases I did not find a drug that did a particle

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of good. I believe normal saline solution does more good than anything else, being subcutaneously injected. No local measures are efficacious. Administer a subcutaneous injection of saline solution at the same time abstracting a like amount of blood, injecting the same amount of the saline solution, which washes the blood. In all of these cases the only thing that seemed to do any good was to control the convulsion by chloroform and use the normal salt solution immediately.

If the theory be true that the eclampsia is due to toxemia or autointoxication, it seems to me that is the rational proceedure.

In regard to antiseptics—I believe with Dr. Barnes that no man has any busines to practice obstetrics today without a pair of rubber gloves in his obstetrical bag. I do not believe in making examinations every hour or every two hours, either with rubber gloves or without them. When you have examined your patient externally, and I do not care how thick the abdominal wall is, you can find what position you have, where the head is and whether the baby has life or not and that is about all you can find out from your internal examination. I say use rubber gloves because I think it makes no difference how long you boil them—you can not boil your hands and you can boil your gloves. In regard to the examinations, I do not believe in making two or three or four examinations. It is absolutely useless. You can not time your obstetrics by the watch. It all depends on what they do and how they do it. If your patient's dilitation is going on slowly, there are other things to do besides making examinations and running the chances of contaminating your patient. I believe you ought to let them alone. In most of these cases you get along by that means better than you do by trying to give your patient medicine.

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TETANUS NEONATORUM

W. W. WYATT, KAMRAR, IOWA.

During the past fourteen months it was the lot of the writer to encounter three cases of tetanus neonatorum, all terminating fatally within 36 to 70 hours. The clinical history of this small series was so instructive and interesting that it was deemed worthy of report, hoping that it will bring out in discussion, some experiences, and the means employed in combating this distressingly fatal disease.

Case I. (Apr. 21, '03).

Infant J., female, age five days, born after normal labor conducted by a German mid-wife. On the morning of the fith day the child awoke with a scream and grew very restless. Nursing failed to pacify it, and only resulted in painfully bruising the mother's nipples by the fixed jaws. The little patient was visited in the afternoon and found in a general tonic convulsion with marked retraction of head and neck, and rigidly fixed limbs.

The trismus was continuous, and it was not possible to introduce a tongue depressor, until partial relaxation was secured by chloroform. The spasms succeeded each other at intervals of four to six minutes, their duration varying from forty to fifty seconds. In the interim, twitchings of various groups of muscles were observed, and the skin found exceedingly hyper-aesthetic. Tempature 103, pulse 180, respiration 60 to 80. Removing the clothing for examination, the umbilicus was found covered by a scrap of charred linen and cob-webs, adherent and malodorous.

Saturation by hydrogen peroxide facilitated its removal, and the navel was found prominent, moist, and granulating, with a tendency to bleed while being cleaned. Answering my inquiry as to the manner of dressing it, the parents stated that the primary one was linen, and lard, and that the cob-webs were applied to check the bleeding when the stump was detached. The abdomen was treated to a thorough cleaning, sterile dressing and bandage. An enema brought away a normal yellow stool; this was followed by two grains of chloral hydrate in nutrient enemata, every two hours. Chloroform served only to diminish the number of convulsions, while their duration and severity in-

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creased. The body finally assumed the position of opisthotonos, which was continuous for an hour before death, the end being in coma thirty-eight hours after onset of trismus.

Case II. (Aug. 21, '03).

Infant K., male; age, nine days; labor managed by mid-wife who officiated in Case I. During the afternoon of the ninth day the child was unusually fretful and nursed constantly. This was soon followed by emesis and a sleep which was disturbed by twitching of face and hands.

On waking an effort was made to give it a spoonful of water, and the mother discovered a stiffness of jaws and an inability to swallow. My first observation was at six o'clock that evening. The face was distorted by grimaces and scowls, the masseter muscle standing out prominently, tightly setting the jaws. Temperature 100, pulse 140, respiration 44. Introduction of catheter and an enema provoked the onset of a violent paroxysm during which the water and a copious stool were voided. Stripping the infant disclosed a soft, bulky, adherent stump of the cord, swathed in several layers of coarse linen which had not been renewed since birth, and showing evidence of frequent soiling by urine. The odor was not unlike that which emanates from a mouse nest. The stump was trimmed off short, touched with carbolic acid and alcohol, then dressed. A few drops of chloroform relaxed the trismus sufficiently to permit the administration of castor oil, 4 cc., and of calomel, .0329 gm. The parents were intelligent, and co-operated in the management by isolating the little one to a dark room, and by securing absolute quiet. Further treatment consisted of the giving of one five-hundredth grain of hyoscine hydromate every two hours, and chloroform when the twitchings foretold the onset of a general paroxysm. Prior to morning visit an effort was made to secure anti-tetanic serum and streptococcic serum, but failed. The parents reported only one seizure, and that in the morning, which was lighted up by giving a little water per rectum. Nutrient enemata were ordered, but were of no avail, for passage of catheter brought on a storm of seizures. The thirst was alleviated and the feeding accomplished by injecting water and peptonized milk into stomach by catheter and small bulb syringe, which procedure caused less disturbance than the rectal method. Hyoscine hydromate was continued, and its effects were manifest by less twitching and an absence of general spasm for nearly ten hours. Morning temperature 100, pulse 128, respiration 36.

In the evening all symptoms were exaggerated, the temperature mounting to 105, pulse thready and intermitting, face livid, body drenched with perspiration, opisthotonos during con-

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vulsions, which now succeeded each other rapidly. Death ensued thirty-six hours after onset.

Case III. (Mar. 14, '04).

Infant D., male; age, nine days; whose daily toilet was in the hands of grandmother. The stump of cord separated on the 7th day, and umbilicus covered with linen coated with rancid, dusty mutton tallow. The premonitory signs were noticeable for about twelve hours, such as restlessness, thirst and difficult nursing, this latter, the mother attributed to a sore mouth, so sent the father for a mouth wash. Fearing that they were ignorant of the true state of affairs, I insisted upon seeing the child. The picture was a true type—tonic convulsions could be excited by the slightest stimulus. Temperature 104, pulse 176-190, respiration 60-80, and stridulous; involuntary dejections during seizures which retracted the head so that the occiput rested between the scapulae; frothy saliva was forced between clinched jaws. The navel was only slightly prominent, dry, but presenting a red and tumefied margin. No evidence of trauma could be found. The treatment varied only slightly from that outlined in Cases I and II, the main departure being the injection of 1-2 per cent solution of carbolic acid at three different points into swollen edge of umbilicus. This was repeated only once. Exhaustion supervened in spite of supportive measures, and death followed in seventy hours.

From the above it is seen that with the exception of the mode of infection and very rapid course, tetanus in the newborn does not differ from the ordinary type in older patients. It is an acute infection whose force is spent on the cerebro-spinal system, due to toxins generated at the site of inoculation, (1), by the bacillus of tetanus (this micro-organism was first described by Nicolair in 1884), (2), and is widely distributed, being especially abundant in dust, manure and soil. When cultivated in pure culture it is strictly anaerobic, but can be grown from mixed infection in aerobic media. (3). It is a rod-like bacillus, whose spore is found at one extremity, causing it to resemble a small pin. (4). During growth its medium is liquefied, and a peculiar odorous gas is liberated. The toxins are all convulsivants, possessing a special affinity for the sensorium, the bacilli themselves remaining at the site of entrance and not entering the blood stream. (5).

Brunners maintains that the spinal cord is modified as in strychnine poisoning; another theory is that the convulsive phenomena are due to peripherial action of the toxins upon the sensory nerves. It is seldom that a diagnosis is made by bacteriological methods for the period of incubation may be very short, perhaps only a few hours, and it is only by the appearance of typical

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symptoms that a conclusion is reached. Recovery from an attack does not confer immunity. (8).

The convulsions of tetanus bear a resemblance to those of strychnine poisoning, but in the latter the muscles of mastication are not involved in the early stages, perhaps not at all, and again, the musculature is entirely passive between paroxysms in contra-distinction to the persistent tonicity of tetanus.

In the affection unfortunately designated as tetany, the twitchings are local and in most cases limited to the extremities. Opisthotonos is seldom seen, and trismus absent. Another point, Trousseau's Sign, is, that compression of the nerve going to the effected muscles, inaugurates the local spasm.

The treatment that concerns us most as obstetricians, is prophylaxis, for little is to be expected of curative measures in lowering the high mortality rate. Any trauma invites the affection, and should not be neglected, but dressed in an aseptic manner.

In one case, kindly reported to me by Dr. Harriman of Ames the avenue of entrance was a prick of a safety pin on the inner side of the left thigh, which was acutely inflamed and had not discharged, the umbilicus appearing normal.

The greater number are inoculated through the unhealed umbilicus, the gelatinous stump of the cord affording an excellent culture medium. The care of the naval of the new-born should and must rank with that of the eyes. It is certainly not consistent obstetric technique to surround the mother with every precaution, instil silver solution between the eyelids of the infant, then place it in the hands of a relation or a neighbor to receive the first baptism of faith. It is as imperative to be as aseptic in the dressing of the umbilicus as in applying a dressing after laparotomy.

As to ligatures, it was a former plan of mine to carry in the obstetric bag a screw cap containing of sterile tape to be drawn through the rubber cork similar to the ligature packages. At present, thanks to our worthy chairman, Dr. Pond, for his suggestion, I adopted the double envelope, the inner enclosing two pieces of 1-4 inch sterile tape, and this is supplemented by similar envelopes containing 4 inch squares of gauze for dressings.

A method that gives me excellent results is to get rid of a portion of the gelatinous material by stripping or compressing the cord, and cutting it short, clean surrounding skin by a solution of creolin, then by alcohol; then swath the stump in squares of gauze, and finally several turns of a three inch sterile bandage to complete the dressings, this giving a neater fit than any home made article.

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If subsequent visits are not intended, it is wise to instruct the one who attends to baby's toilet, in all the detail requisite to maintain surgical cleanliness, and to leave a supply of the dressings to be used in the event of the primary one becoming soiled.

As to treatment after infection, at present we have nothing positive at our command to control the rapidly fatal progress of tetanus neonatorum. The measures employed in the cases reported comprise, in the main, those recommended in the usual type, with the exception of the use of anti-tetanic serum. Much was hoped for in the use of this agent, but dismal failures are still being recorded. An occasional report of recovery may appear, but might not some of these convulsions have been due to peripheral irritations and streptoccoccal invasion, and not to true tetanus? Had it been available, it would have been given a thorough trial.

Drs. Godinho & Fausto (6) present a unique method in its use, the injection of the serum into the sub-dural spinal space after abstracting a like amount of the cerebro-spinal fluid. Ten cc. was the daily dose; two cases were experimented upon; both improved, one recovered, the other dying later of pneumonia. Holmes (7) used large amounts of the serum in a case of recovery, though at the same time employed a solution of carbolic acid. It is useless to inject the serum into the infected area, for it was demonstrated by Vallas (8) that this has no effect upon the bacilli, nor will it destroy them when added to a buillon culture. It is my belief that the laboratory will yet evolve an agent far more effective than the present serum.

Carbolic acid is almost universally used, a 1-2 to 2 per cent solution (watery) being injected into and around the avenue of entrance. Next, in the order of their importance, come the antispasmodics, at the head of which ranks chloroform, because of its convenience, and because of the ease with which much or little can be given, as indicated.

Chloral hydrate in large doses per rectum, should be used with caution, for it is my conviction that the profound depression noted in some cases is due to this drug. Sweetser highly recommends veratrum viride as a substitute for chloral; brilliant results follow its use in Eclampsia and why not in tetanus? Hyoscine hydrobromate seemed to afford a period of quiet in Case II, and should an opportunity arise, will give it further trial.

Finally, we should be diligent in our use of supportive measures by stimulation and feeding, hot immersion baths, and isolation to dark, quiet quarters.

It was not the purpose in this article to present an exhaustive treatise on this disease, but only a case report, with the

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brief summary of the pathogenesis, diagnosis and treatment. Tetanus Neonatorum is fortunately growing less frequent, but it still deserves our earnest consideration, and I trust we may hear from those who have had either success or failure in their contact with it.

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Discussion on the Paper of Dr. Wyatt

C. S. JAMES.—I wish to compliment the essayist on the report that he has made. I consider this a very important subject with us. I have had experience with tetanus in the new-born limited to one case. In that case I used anti-tetanic serum fearlessly with absolutely no results. I do not wish to censure the serum by reason of the fact that it may have lost its activity. There has been one drug named here this afternoon in connection with the obstetrical bag that could be very well displaced and that is the bichloride. I think it could be very justly displaced by carbolic acid. We know when we are using it that we are educating the aunt and the grandmother in the use of this very valuable antiseptic agent and I believe with the essayist, were it more often used in the dressing of the cord we would have fewer cases of tetanus to report and possibly we would have fewer cases of convulsions reported which are not recognized as tetanus. I know in the first two or three years of my practice I can look back and believe fairly I had a case or two of tetanus that I did not recognize and I have no doubt in the future I may again have a case of tetanus that I do not recognize as such.

M. J. KENEFICK.—Speaking of the subject of tetanus from a surgical standpoint it has been my misfortune to have seen two cases of tetanus in my practice.

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One was the result of a compound fracture and the other a puncture to a boy's foot with a piece of glass. The first case was treated by ordinary drugs that were given a few years ago, chloral and bromide of potassium and chloroform with no avail. The boy died in a few days after the development of the seizure. The second case occurred more than a year ago and made a recovery, which I attribute, to a large extent to the hypordermic injection of carbolic acid. If I were naming a lot of useless drugs in the treatment of tetanus I would put down all of them except carbolic acid. I had occasion to look up the literature on the subject a few years ago or rather a short time ago, and I found from the published reports of a great many cases collected that the use of the anti-tetanus serum or anti-tetanic serum was being abandoned and better results were obtained from a method introduced several years ago by an Italian surgeon with the hypodermic use of carbolic acid.

It is better to begin with a strength of two per cent and increase it rapidly up to five per cent. In this second case which I treated a year ago I began with a two and a half per cent solution and rapidly pushed it in a day or two up to five per cent. I did not insert it in the neighborhood of the wound. I do not think that important at all. I injected it into the leg or the arm and it is surprising what an amount of carbolic acid a patient will stand in this condition that otherwise would be considered toxic.

I want to ask the doctor, in closing, if he took occasion to instruct this particular mid-wife of whom he speaks of the nature of tetanus and to explain to her that it was infection and that it probably came from her dirty hands. She had been working in the garden probably. We know that tetanus is due to one cause —that it is due to a specific germ or the bacillus of tetanus and we should instruct these mid-wives that they must be careful and have clean hands. I always attend, in these cases, to the dressing of the cord myself. I never leave that to the mid-wife or the aunt or the grandmother. As soon as I sever the cord I apply the antiseptic to the stump and wrap the stump in absorbant cotton saturated with alcohol and tell the old ladies to leave it severely alone. It is a fact that the mortality from tetanus reaches the frightful percentage of eighty and that we can do but little in the curative treatment but whatever may be done in curative treatment is done with our old reliable carbolic acid.

J. C. Hancock.—It has been my good fortune to see several cases of tetanus and have all of them recover. None were in infants; they were all in adults.

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One case followed a crushing injury to the left arm and a bone fractured on the left leg inside the ankle jonit. Some days after amputation the patient developed unmistakable signs of acute tetanus. On the same day that the diagnosis was made I was able to obtain three bottles of anti-tetanic serum. I immediately telegraphed for more. In all I used eighteen bottles and without any regard to the directions.

I gave as much as I had on hand and gave it as fast as I got it. When it gave out and I could get no more I used chloral, 240 grains in 240 hours, and also the more or less continuous use of chloroform to control the convulsions. After about two weeks of suffering the patient made a perfect recovery and was restored to health. In the other cases I have seen they were also treated with anti-tetanic serum and without any regard to directions as to doses. In one case as much as a pint was given in 24 hours and that case recovered. It may have been more or less chance that the cases that I have been to see have recovered. Other men have probably seen the same number of cases and seen no recovery. It seems to me that the anti-tetanic serum does no harm and in the light I have may do good. Use it freely and without any regard for conventional doses.

C. F. WAHRER.—One speaker said for us "to instruct the mid-wife." The average mid-wife that I have run across is simply not to be instructed. She is past instruction. She knows more than any doctor possibly could teach her and yet the whole trouble that has been spoken of by the writer is caused by dirt infection. I want to mention in connection with this subject one point; too many physicians are content and done as soon as the child is born. I am not going to go through all of the whole antiseptic technique; you all know it but this much should be emphasised. When a child is born we have two persons to take care of, the child and the mother. I wash the woman myself, from the top of her head to the end of her big toe and put clean clothes on her and change the bed clothes and put a clean napkin to her and insist upon it that her hands must not touch her genital organs and I see to it also that the child is washed. I won't say I wash the child but I have done it when there was nobody there to do it and I insist upon it that the navel is thoroughly dressed. I do it myself and no mid-wife is allowed to put grease upon it. I dress it myself and leave absolute instruction that the dressing must not be interfered with until it comes off except for good reasons and then I want to know it. In one case I just caught an interfering neighbor washing the child the third day. She took the dressing off and held the navel

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up with one finger and washed all around it. She made it clean. (Laughter). That must not be done. The doctor must see that the child is taken care of, himself because they can not all have trained nurses.

W. W. WYATT.—I approve of Dr. Kenefick's injunction to the nurses; always instruct them. If we do not do it we neglect our duty. A doctor's responsibility isn't over when the child is born.

As to the use of the serum, of course it does not conflict with the use of any other treatment. Right here I would like to cite a case from a hospital in Pennsylvania in which fifteen million units of anti-tetanic serum were used and at the same time the other treatment was continued and with absolutely no result. The case terminated fatally in thirteen days. In my cases I have no opportunity of giving the serum. My home is in the country. Therefore the serum is not available.

There was one thing that Dr. Power spoke of concerning Eclampsia. I agree that it is due to toxines and we can not accomplish anything by local measures. I believe in tetanus we should adopt the suggestion made by Dr. Powers and wash the circulation by saline solutions, subcutaneously injected. Extract a given amount of blood and inject a like amount of saline solution. That washes the circulation.

In answer to Dr. Wahrer that we have two persons to look after at the birth of a child; some times we have twins and have more than two. I always dress the infant myself and I apply a binder of sterilized gauze three inches in width—I do not like the home made article. They look nice and clean and are feather-stitched around the edges but I don't use them. A three inch gauze bandage nicely applied five or six turns will stay right there and it must not be disturbed and the chances are we will have no infection.

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SECTION OF STATE MEDICINE AND HYGIENE

FRIDAY EVENING

REPORT OF CHAIRMAN, W. B. LA FORCE, OTTUMWA, IOWA.

Prevention of disease is the highest duty of the physician as such. Sanitary science has accomplished more for mankind than any other department of medicine and surgery. It is possible to do more in that line, and more is being done at the present time than ever before in the history of the world. It is only in the last few decades, since the establishment of bacteriology as a science, that sanitation could be properly raised to the dignity of a science. The subject now occupies the entire time and greatest skill of many of the brightest minds of the world. It is a rapidly growing science. It is probably advancing with greater strides than any other department of practical medicine. More old theories are being overthrown and being replaced with new ones founded on observations and experiments which can be demonstrated to be facts without the possibility of a doubt. This progress has already furnished the profession with enough knowledge about the causes of diseases and the means of preventing it that if society lived in accordance with it there would be very much less sickness than there is. In fact there is good reason for believing that if we availed ourselves of our opportunity, if we lived up to the knowledge that we already have, the average length of life might be almost doubled.

Therefore the chief practical advance for the future lies in making application of the knowledge already possessed. True, there are many valuable facts yet to be discovered and much effort is being put forth in investigation, more than ever before in the history of civilization, but in the last few years discovery and invention have so outstripped practical application that what we especially need now are measures that will provide for the more general diffusion of the new knowledge and its practice in the daily lives of the people. To reap the full benefit of these truths for society often requires some temporary inconvenience on the part of a few, and they will not subject themselves to it voluntarily, very often therefore some legislation is required, and efficient and zealous officers to enforce it.

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Therefore instead of having my address as Chairman of the Section consist in a review of the discoveries and advance of the past year I believe it will be more profitable if we consider briefly those subjects which are in need of legislation.

Hardly any science has taught the profession the great value of little things, of the great importance of attention to the most minute details as has that of bacteriology, as illustrated in the details necessary to secure a perfect aseptic technique in surgery. Much of our recent knowledge and advance in sanitation and hygiene shows that we need to observe this same attention to details and to what to some might appear insignificant matters. Therefore some of the laws necessary for ideal results might seem to the ignorant as unnecessary and trifling. But the applications of sanitary laws are so manifold and far reaching that if we secure a little advance in each separate line it will amount to a great deal in the aggregate.

The legislation desirable may be divided into classes: State, municipal and resolutions of the State Board of Health.

Time will not allow that I give an elaborate and full outline of all the legislation desirable, nor will I attempt to indicate in each case who should make the law, but will try to give in general outline what is most needed.

Probably the subject which is most important is that of Tuberculosis. First because it is a disease so wide spread, and second because it offers the greatest opportunity for results in the way of prophylaxis.

The need of a State Sanatorium for incipient cases of Pulmonary Consumption is I think now generally conceded and it is quite probable that the next legislature will provide for one.

The Sumers bill in the last legislature passed the house nearly unanimously and doubtless would have had a similar success in the Senate if the Committee on Appropriations had not held it up in the committee. They however expressed themselves as favorable for it next session.

Again I think it will be conceded that every house where a consumptive has died, or moved away from should be thoroughly disinfected, also that there should be rigid requirements that the patient and his nurses should take especial care to destroy all the sputa. In order to accomplish these ends it would be advisable to have the disease made a notifiable one, the same as other communicable diseases of which physicians are required to give notice to the local boards of health.

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EXAMINATION OF SCHOOL CHILDREN.

The subject of next importance in my mind and which offers opportunity for the prevention of much sickness is the regular and systematic examination of school chilren as to the condition of their health by competent physicians one or more in each county who devote their whole time to such work. It is being done in a great many places; more uniformly but also in small towns and villages. The advantage and benefits are readily demonstrated, and many such reports are now available so that very strong arguments can be given and they should be brought before the attention of the next legislature.

STATE LABORATORY.

The last legislature made appropriation for a laboratory in connection with the State Board of Health. It required much time and effort on the part of a few to secure this. A start has thus been made and a chance given to demonstrate its value if the opportunities are taken advantage of by the physicians of the state, and the various local boards of health. The benefits which are possible from the laboratory may be studied in the workings of such institutions in other states, notably our sister state of Minnesota.

However a state laboratory, so far distant from the great majority can not possibly meet the needs as would smaller, yet very helpful laboratories which might easily be provided in each county seat for diagnosis of tuberculosis, diphtheria, typhoid fever, etc. Each county ought to be required to establish such laboratory whose total cost need not be over two hundred dollars.

STATE CONTROL OF ANTITOXINE.

In connection with the state labortory there might very easily be arranged conditions for manufacture of antitoxine for boards of health. Some states and municipalities do manufacture their antitoxines and at a cost considerably less than the common market price.

TESTING WATER SUPPLIES.

The laboratory will be in position to give more attention to the examinations of water supplies, suspected sources, etc. Already in the past some provisions have been afforded in this line, but much more will be possible and such examinations of

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public supplies of cities should be required to be made regularly and certain uniform conditions and qualifications required of all such public sources.

VITAL STATISTICS.

The subject of Vital Statistics is of importance in more ways than is commonly considered. One of the papers on this program will take up this matter in detail so I will not infringe on that time.

PNEUMONIA.

Ever since the occurrence of the epidemic of La Grippe in 1889, and during every succeeding epidemic pneumonia has had an unusual prevalence and fatality. The excellent records of vital statistics of the cities of Chicago and New York show that during the six colder months of the year pneumonia has been the cause of nearly twice as many deaths as consumption. While the Great White Plague caused a mortality of about 11 per cent of the total, Pneumonia, now termed "the Captain of the men of death" has been the cause of over 22 per cent of the deaths of the last five months. Pneumonia has for many years been known to be an infectious disease. And there seems to be good reason for considering it in some cases at least, to be more or less contagious, and in much the same way that consumption is, viz.: through the dried sputum. Therefore it would seem advisable for the State Board of Health to at least investigate the subject well to see if measures could not be proposed that would be of benefit along this line.

MALARIA.

Since it has been proven that malaria is caused by the bite of certain mosquitoes infected with the germs from a patient who has malaria, doubtless many cases could be prevented by preventing mosquitoes gaining access to a person who has the disease. Every person, therefore, who has malaria should be required to be thoroughly protected from the visitations of these otherwise disagreeable pests.

DAIRY CATTLE.

In the light of recent experiments and observations as to the relation of human and bovine tuberculosis, it seems very cer-

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tain, notwithstanding Dr. Robert Koch's former statements, that there is very great danger in drinking tubercular milk, or milk from a tubercular cow.

It is possible by means of the tubercular test to tell quite positively whether a cow is infected with tuberculosis or not. It would seem therefore that there ought not to be any excuse whatever for our people running the risk of acquiring tuberculosis in that way. All dairy cattle at least should be tested regularly with the tuberculin injection and no animal be allowed to furnish milk for any person until proven to be free of the bacilli of tuberculosis, and then examined regularly thereafter to determine that she is constantly free from infection.

This surely is a very desirable condition of affairs to have and is likewise comparatively easy and practical in its accomplishment.

SPITTING ORDINANCES.

Laws against miscellaneous spitting have been quite widely advocated and secured, but not nearly enough so. Every county seat at least should have such an ordinance and see that it is enforced. Besides the immediate benefit in preventing the spread of pathogenic germs such laws are helpful in an educational way.

GENERAL EDUCATION.

This latter statement suggests a very important subject, and that is the general education of the public in sanitary matters.

The effects of alcohol, tobacco and some other narcotics are required to be taught to a certain extent in the public schools. But very much more relating to hygiene and sanitation could be so taught. Probably no subject of more value to the student and to society could be studied by the school children. An eminently practical course could be outlined that would run through several years.

PROFESSIONAL EDUCATION.

Not only the public but also the profession itself should be better instructed. Even those who are appointed to the position of health officers, as physicians of the boards of health are generally wofully ignorant of their duties and sadly incompetent to fulfill them. To be sure they generally earn all they get in a financial way many times over. Again the low salaries are due to the ignorance of the public, and of the members of the boards of health, of what sanitary science is, and what it demands. In-

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stead of being appointed for political reasons, as is too often the case where there is anything like reasonable emoluments, there should be civil service rules and appointment of those who pass a satisfactory examination in the sciences of sanitation and hygiene Annual schools or conventions dealing with recent advances might well be conducted under the auspices of the State Board of Health for the officers and members of the local boards. Certainly closer relation between the state and local boards should exist and better supervision of the latter by the former be provided for.

Car sanitation, regulation of barber shops and bath houses, the great social evil, marriage of the vicious, diseased and degenerates, lewd advertisements in newspapers and magazines, publications of the formula of patent medicines, farm for epileptics, are all matters of importance concerning which desirable legislation is possible and I hope to be attained in the not distant future, but time will not admit of further consideration along this line at present.

I take great pleasure in introducing to you the following members of the program, who will each doubtless entertain and instruct you on subjects of live interest and importance to sanitarians which I trust every one of you are to a greater or less degree and that from this time on you will serve society and your constituents by greater devotion to these public needs. And that each of you personally, and in your local medical organizations, will be more active and zealous in helping the society's committee on legislation.

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EARLY AND CORRECT DIAGNOSIS OF TUBERCULOSIS.

C. T. LESAN, MT. AYR.

If the physicians of the state of Iowa expect to make any great advancement in the way of prevention of tuberculosis it will be necessary to advance the line of early as well as correct diagnosis of this particular disease. In too many cases the diagnosis is delayed until the disease has advanced to such a stage that the laity can readily make the diagnosis. Too many cases are to go untreated, or if treated for some other cause, until the symptoms so characteristic, namely: Bright and suffused eye, hacking cough, progressive emaciation, hemoptysis, purulent sputum, hectic flush and night sweats, all working in unison before a diagnosis is made.

It is not the purpose of this paper to go into a minute scientific discussion of the different methods and means of diagnosis of this disease, but rather to urge a more earnest use of the methods which we know to be useful as well as reliable.

It is the purpose of this effort to arouse rather than inform.

The early and correct diagnosis of the hundred of incipient cases of pulmonary tuberculosis now existing in Iowa will do as much as any other measure to prolong the lives of those in which the disease exists and will do more as a preventive measure among others who are constantly coming in contact with these cases, not knowing the true nature of their illness. It is our duty to inform our tubercular patients as to the exact condition in which we find them, and to do so at as early a date as possible, and by so doing give them an early opportunity to provide themselves proper treatment.

I not only believe the patient himself should be informed as to his true condition but that the local board of health should be notified in order that the individual may receive proper printed instructions how to guard against infecting other members of his own family as well as the public, and also that he may be prohibited from following occupations in which he would come in contact with food products of any kind which are to be used for public consumption.

Thousands of people in the state of Iowa are today sowing the seed of tuberculosis and committing a crime for which they

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are blameless, because they do not know the true nature of their disease, a large per cent of them being treated for Chronic Pluerisy, "Throat or Stomach trouble," the correct diagnosis being kept from them, many times by request of the relative of the patient.

Pulmonary tuberculosis is known to cause the death of more persons than any other disease, and it is the most widespread of all diseases, causing the death of over 1-2 the persons ranging from the ages of 20 to 30. At post mortem examinations, signs of healed tuberculosis prove that many who die of some other diseases have been infected with tuberculosis.

The early recognition of this disease is of the first importance as then food, sunshine, fresh air and proper medical treatment can frequently arrest the disease. Too much stress can not be laid upon the importance of the abnormal condition of the lungs when there is a question of tuberculosis.

The chances of recovery are far greater in the early stage of the disease and the time required for convalescence is much less.

Suppose a case has been allowed to go until physical signs distinctly appear in one lung, it requiring 2 or 3 years of climatic treatment to effect a cure; suppose now the diagnosis was made early so as to require only 6 to 9 months for relief. We not only make it possible for many more to seek treatment on account of the money investment being much less in the later than in the first. Money may be provided by friends—but no friend can make good the encroachments of this disease if too far advanced.

The time of diagnosis has largely to do with the cost of the treatment. The shorter the time necessary for a patient to remain in a sanitarium, the greater number of patients could be cared for during a given period. If the time required for treatment was only 6 months, twice as many patients could be cared for than if a year was necessary. In other words, the cost of maintenance would be distributed over twice as many families. Then the hope of recovery is made greater to those of limited means, by early diagnosis—not only as far as the disease is concerned but also because it brings within their means the remedy for the disease.

A thorough knowledge and familiarity of the symptoms and signs indicative of tubercular infection is of most importance in making an early diagnosis. Repeated examinations of normal chests will be necessary to keep us in a position to readily detect an abnormal condition.

In many cases in which consolidation can not be detected by other methods the X-ray will disclose it and by so doing

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makes itself a means of early diagnosis but to assure the best results the examination must be conducted by an expert.

The injection of Guinea Pigs with suspected tubercular fluid is somewhat more complicated than would at first appear.

The time required to complete the test alone makes it almost worthless as a means of early diagnosis. It also requires an expert pathologist to conduct the post mortem examinations if the findings are to be relied upon.

The tuberculin test is of great value in those cases in which all other means fail to make a positive diagnosis, some good authors claim it is not absolute as syphilis and other conditions respond similar to tuberculosis.

Microscopical examinations while not considered, strictly speaking, a means of early diagnosis is to be relied upon as positive when the bacilli of tuberculosis is found—and if careful and repeated examinations are made without finding the tubercular bacilli it may be considered a fairly good negative test. A more constant use of the microscope will be an advancing step toward early diagnosis of this disease, and it is the duty of every doctor in the state of Iowa to become familiar with the use of the microscope, not only because it is essential to a diagnosis of this particular disease, but also in many others which are to be met daily in general practice. None dispute the value of the microscope but many neglect its use. Some say they do not have time to do microscopical work, but as a rule the doctor that makes that staement could not use a microscope if he had one, or does not employ any one to do his microscopical work but rather allows it to go undone.

The burden is upon the General Practitioner for the early recognition of this disease for it is to him the patient first comes for relief, inquiring as to the cause of those peculiar symptoms which are affecting him. A patient complains of gradual loss of strength and weight, and is too often given a tonic and is turned away. He complains of night sweats and is given pennyroyal teas. He complains of spitting blood and has it suggested to him that it probably comes from his nose or throat, and for all the other well known symptoms of tuberculosis he gets about the same consideration. He never is asked as to his family history nor does he receive a thorough physical examination, and a microscopical examination of the sputum is never thought of.

One or more symptoms of tuberculosis demands our best efforts in each individual case. If we can not satisfactorily determine the true nature of the disease it is our duty to refer the patient early to some one who is doing this special line of work.

I do not charge that the members of this society and especially those who attend its meetings are guilty of this gross

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neglect, for I do not believe there is an organization in the world which is making a greater effort toward the right than the Iowa State Medical Society but outside of this society and among the members of this society who are never seen here but remain at home with a purpose to destroy like vultures our practice we leave behind, and also among the class of men who willfully delay a true diagnosis only to get a few more dollars out of their patients, are found the guilty ones.

Every text book gives fully the methods of diagnosis and the symptoms are familiar to all. Foolish indeed would it be for one of my limited experience to go into a field so well worked by our master pathologists and diagnosticians. The need is not for knowledge or methods. Courage, action, duty, would be my war cry, not only on the physicians but every citizen of Iowa should join to prevent the spread of this dread disease. The victims of the great white plague number 2,000 per annum in the state of Iowa, more than 20 to the county, one to each congressional township. How much of this is due to ignorance, to neglect, to error? Where is the fault, the responsibility for all this disaster? A railroad accident causing the death of one or more persons would be investigated by the coroner of any county in Iowa. A building burning and killing persons would be a calamity calling for investigation. The burning of the Iroquois theater in which 600 lives were lost not only paralyzed the city of Chicago but sent consternation over the entire land, resulted in a long drawn out investigation, the result of which was the indictment of a number of men, but in the face of all these facts 2,000 persons die of tuberculosis in this state alone, each year, without a single investigation on the part of any one as to the cause. I charge that 25 out of every 100 deaths from tuberculosis in Iowa are the result of an inexcusable error on the part of some one. As a member of the medical profession I must admit that we are not free from guilt.

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PRESENT DAY TREATMENT OF TUBERCULOSIS.

J. W. KIME, FT. DODGE.

When a diagnosis of tuberculosis has been made the question of treatment at once presents itself. What shall be done with the patient? Almost without dissenting voice, either from physician or laity, comes the answer, "Change climate at once. Go to Colorado, New Mexico, Arizona, Southern California, Florida or North Carolina."

Why?

We have here presented the most varied climes, the widest ranges of temperature, the greatest diversity of humidity and altitudes extending from the sea level to that of the snow-capped mountains in the heart of the continent.

The cases are the same, their circumstances the same and the ability of their advisers the same. Why then opinions of so great diversity? It is unusual in the practice of medicine that the experience of one physician is diametrically opposed to that of another of equal ability. Neither is it here. Cases get well in all climates, in all altitudes, in all degrees of humidity and without any regard whatever to the degree of temperature. And, conversely, new cases arise in all climes, in persons who have never changed residence and without any regard to climatic conditions.

A study of the various health resort states referred to shows the following:

STATIONS	Elevation	Mean Barometer	Shnshine, average percentage of possible.	Average Relative Humidity			Temperature				
				8 a. m.	8 p. m.	Mean	Spring	Summer	Fall	Winter	Annual
Asheville	2250		65%			76	54	71	55	38	55
Denver	5291	24.72	72%	61	39	50	47	69	50	31	49
Jacksonville ..	43	30.03	59%	85	77	81	68	81	70	56	69
Los Angeles..	338	29.62	73%	78	64	71	59	68	63	54	61
Phoenix	1108	28.75	84%	50	24	37	67	87	69	52	69
Santa Fe.....	7013	23.27	77%	57	36	46	47	66	49	31	48
Des Moines..	861	29.11	59%	80	65	72	48	72	50	23	48

The above data have been kindly furnished me by Dr. Geo. M. Chappel, director of the Iowa Weather Service.

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Since each of these widely different climates shows results in a certain percentage of recoveries, and none of them excelling to any appreciable extent over others, it is evident that neither temperature, humidity, elevation, atmospheric pressure or percentage of sunshine is the factor to which the favorable change may be accredited.

There is no marked difference in the number of recoveries whether in Norway, the British Isles, in Germany, France or Italy. Crossing to our own side of the Atlantic we find like results in Massachusetts near the sea level, in the Adirondacks of New York, in Pennsylvania, in the Valley of the Mississippi, in the Rocky Mountain Region and in the Great Southwest. Equally good results are obtained on the mountain top or at the sea level, in the dry and arid regions or on board a vessel in the open sea. As between the invigorating breezes of the North and the depressing heat of the South the former are much to be preferred. In New York or Massachusetts, in Wisconsin or in Iowa patients under proper supervision will do infinitely better and more of them will get well than if they seek some fabled clime in some far off land.

The benefits to be derived from a change of climate are nothing to be compared to the hardships sustained, to the wide separation from home and friends and the weary waitings for the return to health. All writers agree that this is not a question of months but of years and more recently it is affirmed that the change must be a permanent one.

As a result of the extravagant claims of climatologists some of the sections named have been flooded with poor consumptives, many too sick to be on their feet, money gone and friends thousands of miles away. Even for those with means and in fair physical condition it is daily becoming more difficult to find suitable shelter. Few doors are open to them.

In Denver and in many other places I find that children, dogs and consumptives are classed together as undesirable tenants. California proposes legislation to keep the consumptive out.

In all the sections noted, except possibly at Asheville, N. C., there is not a single sanatorium of any size that is open to these patients. Such a place was promised at Idylwild in Southern California but it has become a pleasure resort and consumptives are no longer admitted. There are a few tent colonies and some small private institutions but nothing worthy of comparison with the Sanatoria in New England and in the Eastern States, sections not noted for their climatic conditions. None of these health

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resort states are prepared to properly care for the tuberculous patient and it is little short of homicide to send him where no preparation has been made for his reception.

There is so little in specific climate that it may practically be ignored without detriment to the patient. Were figures necessary to confirm this statement they might be found in the pages of your own case records. Of all those sent but few are now alive.

In referring patients to any climate the order is simply, "Go." Not a word of what to do or how to live, of life in the open air all the time, of special diet and forced feeding, of rest and constant medical supervision. All this is left to the patient's own sweet will. And the consumptive patient has no will. Tuberculosis is to a marked degree a species of insanity,—insanity in the sense that the mind of such a patient is no lnger a normal mind. The toxines secreted so affect the delicate mechanism which has for its function the transformation of the material cell into the intangible and immaterial thing which we call mind that the normal flow of cerebration is interrupted and the patient is controlled by moods and spells that do not characterise his actual self. Yet this patient, sick both in body and in mind, is given rein to drift with every passing whim in any direction that resistance does not present. Little wonder indeed is it that he falls a prey to all the fakes and charlatanry of the day, that all the nostrums are tried and all the cures are taken.

It is unquestioned by all who are qualified to express an opinion that he who advises climate for the cure of tuberculosis does his patient a grave injustice, he reveals his inacquaintance with the modern treatment of the disease and stands at least half a decade behind the onward progress of the profession in which he is enrolled.

Climate in tuberculosis is a will o' the wisp, it is the end of the rainbow with its pot of gold. It is ever just a little beyond. It rests in Colorado, New Mexico, Arizona, California. Like children in their simple faith chasing the rainbow's vanishing end and delving for treasures where once it stood, our patient pursues his phantom till worn and wasted, weary but hopeful still, he falls asleep and wakes to learn that the magic end of the bow of promise rests upon the mystic shores of the spirit land.

It has repeatedly been shown that cure is seldom effected by climate to such an extent that the patient may return to his former home. That is, one cured in Colorado or California must remain in the climate where improvement was effected. All practitioners have noted this fact and all pathologists assert its importance.

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These patients must be treated as near to their places of residence as it may be possible, and fortunately, even the best climate is of secondary importance to methods at our command which are readily obtainable in any suitable locality. In other words, it is everywhere conceded by those in position best to know, that patients sent afar from home to some climatic resort are leaving conditions better suited to their recovery, and, with all the added hardships, are not receiving the benefits that might be found near home.

The exaggerated claims for climate in the past have been reduced to the single one that that climate is best which permits the greatest number of hours to be passed in the open air.

In all tuberculosis sanatoria both in Europe and America, no matter where located, it is found entirely practical to keep patients in the open air not less than twenty hours out of the twenty-four. This is likewise true for Iowa. Little inconvenience is found in the open air method, both day and night, except on the very few days when the mercury ranges far below zero.

The excessively cold weather of January and February of this year will be remembered. For an entire month the mercury scarce rose to the zero point while the frost penetrated to the depth of six feet or more into the ground. Yet during all this period with the exception of a very few days when the lowest points were touched, every patient at Fort Dodge was in the open air both day and night except at meal times. Not only this, but the patients were perfectly comfortable and contented. Nor do these conditions apply to Iowa alone but they are known to be true for all that vast region extending from Maine to Iowa and it is difficult to conceive a climate that will permit a greater number of hours to be passed in the open air.

The open air method may be variously applied during the winter months in our northern climate. Trudeau and Loomis Sanatorium place their patients on open porches well protected from the winds. Many institutions abroad adopt the same measures.

We have found it very convenient to convert the patient's room practically into an open porch by throwing widely open the windows which are of large dimensions while on the opposite side of each room ventilating shafts pass upward through the roof. The patients are kept comfortable by means of clothing, robes, caps, foot warmers, etc.

So important is the correct expression of the present professional opinion upon this subject that I quote some of the best authorities. Trudeau says: "When I went to the Adirondacks in 1873 the medical profession took little interest in the disease known as consumption, there was no recognized treatment for

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it except change of climate, and patients were sent principally to warm climates in a desultory sort of way because they coughed and nothing that could be done for them at home was of any avail.

"Each medical authority held differing and often very decided views as to the relative advantages of various climates; some advising warmth and equability, others laying special stress on dryness or elevation. Nevertheless little by little it became evident that the great majority of consumptives died wherever they went, and the few recoveries that took place occurred in regions which differed widely as to elevation, temperature and dryness and that as many patients recovered in the intense cold and storms of the high Alps and other mountains as in the warm, equable temperature and dryness of atmosphere to be found in such countries as Egypt and the South of France, while cures were reported from time to time in patients who had gone on long sea voyages or remained in indifferent climates where none of the conditions considered essential existed.

"Wherever the consumptive was sent by his physician little or no stress was laid upon regulating the habits of his daily life, beyond a recommendation to live out of doors and to exercise as much as possible, while for medication cod liver oil, and, later, creosote were generally prescribed." I regret to say that in Iowa a very large percentage of physicians are still living in the year, A. D., 1873, upon this question.

Knopf says: "There is hardly any subject on which more has been written than on the subject of climato-therapy. There is still a vast diversity of opinion as to the respective merits of what are still sometimes called specific climates for consumptives; but the number of phthisio-therapeutists who consider even the best and most suitable climate of secondary importance, and the hygienic and dietetic treatment, preferably in a closed establishment, or under constant medical supervision in congenial surroundings, the all important factor, is constantly increasing."

Hilier, a well known English authority says: "Ocean voyages, high altitudes, and dry climates have all been eulogized in turn as remedies for phthisis. I have had phthisical patients under my care and observation for considerable periods of time under all these conditions, and the conclusion I have come to is that the benefit derived in every case is chiefly dependent on the extent to which the patient is constantly kept in pure air."

As long ago as 1897 an Iowa physician after spending several years in Southern California, New Mexico and Arizona said: "One hundred men buy lottery tickets. One receives a prize. The ninety-nine have not only received blanks, but they have sustained heavy losses. The successful one's name is herald-

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ed to the world, and soon all know of his gain. The ninety-nine welcome seclusion. A few itinerant consumptives are perhaps today enjoying recovered strength and health, while thousands have sacrificed their only chance of recovery in their mad search in many climes for that which they might have found at home, if their wisdom had been as ardent as their zeal."

MEDICINES.

The medical history of a case of tuberculosis usually is:

(1). A course of patent medicines prescribed by himself, the druggist, or by the patient's friends.

(2). A course of medicine under the physician, consisting of creosote, guaiacol, cod liver oil, maltine, tonics, etc.

(3). A course of tuberculin, lymph, copper, or other specific for revenue only.

It is difficult to say which of these courses is most harmful to the patient. All lull him into an unsuspecting belief that something is being done and that he is getting better while daily his chances for recovery are slipping away from him.

While it is certain that no medicine or lymph or other substance has any known value whatever on the tuberculous process, drugs have a legitimate place in this disease. Intercurrent symptoms arise and occasionally call for treatment. If the cough is excessive, night sweats severe, diarrhoea exhausting, or other like troubles arise, remedies suitable for their relief are indicated. But that permanent relief may come from drugs is an error no less grave than that the principles of Christian Science applied might be fraught with results for good.

Time is lost in any attempt to treat these cases with medicines, and time is the essential factor which determines the chances of recovery in this disease.

In this connection I quote from the report of the Tuberculosis Committee of the Charity Organization Society of the City of New York, which is composed of many of the best phthisiologists in this country, it says:

"Resolved, That a public announcement be made that it is the unanimous opinion of the members of this committee that there exists no specific medicine for the treatment of pulmonary tuberculosis, and that no cure can be expected from any kind of medicine or method except the regularly accepted treatment, which relies mainly upon pure air and nourishing food."

What then shall we do with the consumptive patient?

First we must recognize him much earlier than has been done by many in the past. It is not unusual to see these patients in almost their final stages without a diagnosis having been

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made. Such cases practically all die no matter where they go or what they do. It is exceedingly important that they be recognized in their incipient stages. Time must not then be lost in their treatment with medicines. These do no good while each day the patient approaches nearer to that point when recovery is impossible.

Of all the factors in the treatment of tuberculosis fresh air and sunshine stand first. Trudeau puts it, fresh air 50 per cent, nutritious diet 25 per cent, rest 25 per cent.

Medical supervision, constant, painstaking and with the firmness of military discipline, is necessary to carry out the conditions essential to the proper treatment of this disease. This may be found only in the modern sanatorium for tuberculosis, a full discussion of which time will not now permit.

Gentlemen, never in the history of medicine has any question forced itself upon the profession as does the one which now confronts us.

The world has moved up to it and demands that we, who occupy the stage in these opening years of the twentieth century, blot out this pestilence, even as those in whose footsteps we essay to tread have put to rout the scourges of the past. Cholera, smallpox, leprosy, yellow fever, the plague and diphtheria, all have lost their terrors to man. But from out the darkness of the past there stalks a demon at whose glance the fairest withers and at whose touch the strongest seeks his couch of death.

Verily, is this "the pestilence that walketh in darkness and the destruction that wasteth at nooday."

This work is ours, we can not shirk it. The hour is at hand, the eyes of all men are upon us, and the history of medicine pauses that we may write the conquest of this, the Arch Enemy of Man.

Discussion on the Paper of Dr. Kime.

HENRY ALBERT.—It has indeed been a pleasure to all of us to listen to the report given by Dr. Lesan and the report of the chairman, Dr. La Force. The subject of tuberculosis is of great interest at this time while the subject is receiving special consideration at the hands of the legislature. The papers presented consider the subject in detail and there is very little indeed to which we can take exception. So long as tuberculosis exists it will remain of great interest to us. Now that we know that tuberculosis is due to a specific microorganism and we know or are absolutely certain of the method of the spread of this microorganism, we know that it is a preventable disease, and not only that but that it is a curable disease. We find instances at autopsies, for instance 66 to 75 per cent of all cases that come

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to the table present some evidence of tuberculosis, either in its active stage or in some latent form or as healed. We find that one-seventh or about 17 per cent of all cases that die, die of this disease which means there are a great many cases that are cured and there is no doubt but what fifty percent of all cases that have tuberculosis are cured of that disease. The question, therefore, of early diagnosis is very important from the standpoint of treatment. Dr. Lesan referred to the microscopic diagnosis of the disease, the determination of the presence of tubercular bacilli in the sputum. That is a very valuable method of determination of the disease and there are a great many cases where the diagnosis is not made absolute until these germs are found. It is also true that the germs are not found in the sputum until the breaking down of the lung tissue. In a great many cases where there is rather a large amount of expectoration the germs are found only after repeated examinations and we think we ought not to rely entirely on the laboratory method of diagnosis and that the clinical methods of diagnosis ought to receive their full importance. Reference is made to the use of tuberculin as a test for the presence of tuberculosis. It was also stated by Dr. Lesan that it was not of absolute value since it is found also in syphilis. It is true that it is frequently found in syphilis. It is true, however, that not all cases of syphilis will react when injected with tuberculin. It is very probable, too, since we know, that the two diseases may exist at the same time and I might say that the reason for the co-existence of the two diseases has not yet been absolutely determined but it is known that frequently they do exist together. It is very probable in those cases of syphilis which react to the use of tuberculin, there are cases at the same time where there is the tubercular infection and it does not lessen the value of the reaction that rsults from the inoculation of tuberculin. In regard to the inoculation of guinea pigs as a method of early diagnosis, it is very seldom chosen for the determination of tuberculosis of the lungs, by the inoculation of sputum, not because of the length of time which it takes, because it only takes about three weeks to determine whether the guinea pig is susceptible to tuberculosis nor on account of the fact that it is hard to determine the condition of the guinea pig, but rather because in the case of sputum there is always mixed infection, not through the lungs or from the lungs themselves, may be, but from micro-organisms coming from the mouth, as distinguished from the lungs. We know that the streptococcus, remaining in its natural habitat, has no great purulence. The use, therefore, of animal in inoculation is not made very frequently in cases of tuberculosis of the lungs. The value is much greater in cases

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of tuberculosis of the pleura or some of the synovial membranes where there is no such mixed infection.

The question of the solution of the problem was referred to by Dr. Kime in his paper. The solution of most questions is the education of the people against the effects and the results of some of the uncleanly habits of tubercular patients. One essayist would have us hold meetings in every township in every county in the state and there discuss the problems of tuberculosis. I do not think that is the way to handle the difficulty. Different opinions exist among the laity as well as among physicians. I think the solution of the educational problem should rest with the State Board of Health; send out literature to the various local boards or through the schools or in some way inform the masses. Anything from the State Board of Health is always regarded as scientific authority in the community in which it is received.

The problem of sanatorium treatment has received careful attention at the hands of Dr. Kime. I can only agree with the doctor in regard to the value of the sanatorium in climates such as we have in Iowa. The authorities that the doctor gave us, as well as such authorities as Bowdisch and Trudeau, who have made a very thorough examination of such cases, show that tuberculosis may be cured in sanatoriums in such states as Massachusetts and New York and Iowa, just as well as in New Mexico and Colorado, to which we have always sent out patients and we hope sincerely that both houses of our next legislature will secure the passage of a bill establishing a sanatorium for the treatment of tuberculosis within the state.

Reference was made to the establishment of a State Bacteriological Laboratory by the last General Assembly in connection with the State Board of Health. You may think it would fall upon me, since I have been unfortunate enough to have been chosen to be a director of that laboratory, to say something in regard to the scope of the plan and the value of such a laboratory. I will say that the Board has not, as yet, determined in full the scope of the work. It will be determined at a later meeting and the information will be sent to the physicians of the State. For that reason I do not care to say anything of it. I am sure, however, that every physician here will second any recommendations of the Board of Health coming before the Legislature, asking for an additional appropriation.

Reference was made to the establishment of special laboratories in the counties and that such laboratories could be maintained at a cost of $200. I doubt very much the advisability of the establishment of such laboratories; for any such sum one can not begin to be erected. A microscope for bacteriologi-

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cal work will cost $100.00. Apparatus for the same would cost at least $300. The services of an expert bacteriologist could not be secured for less than three to five hundred dollars and the erection of such laboratories in the different counties of the state, I am sure will scarcely be advisable.

Reference was also made to the manufacture of antitoxin by state authorities. Such also I think is not advisable. The care which is necessary for the manufacture of antitoxin is very great and unless you are familiar with some of the details which are necessary in the making and distribution of antitoxin, such as taken by the great laboratories, you can not realize the importance of such work.

It is too much of a problem for a state of this kind or for any state to undertake. I think it advisable, however, for a government laboratory to be erected and maintained by the Federal Government and then we will be absolutely certain and sure of the antitoxin produced and we will secure it much cheaper than we do at the present time.

Special reference was made with regard to legislation with reference to the spitting cup. The great cause of the spread of tuberculosis is no doubt the expectoration habit. We do not know who of us may be afflicted with tuberculosis and the habit of expectoration, whether by a tuberculosis patient or some one else should be prohibited. The legislative matters referred to in the paper, on the whole, should be fostered. I know, to some extent, with what zeal and earnestness the legislative committee aided by the State Board of Health, worked during the last General Assambly. We hope that the State Board of Health, aided by the Legislative Committee and Board of Control will work with still better results the next legislature.

CLIFTON SCOTT.—In regard to the matter of the education of the people, I believe the doctor is entirely too sanguine. Efforts to educate people along these lines, after they have reached middle life are not generally successful. The public affect to believe when we as members of the legislature or even not as members of the legislature, ask for something, that we have "an ax to grind," that we are looking out for our personal interests, that we are trying to get legislation to benefit our own interests and simply put them to an inconvenience they do not wish to be annoyed with. They think much of what we ask for is only vague and technical.

The only way we can hope to bring the public to co-operate in the question of extirpation of this disease and its prevention, is by the education of children in the public schools. If we bring about that matter there must be proper education in the public schools of the state of Iowa. Gentlemen, you may say

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this is putting it a good way off, you may say you do not want to wait, you may say you want to educate the present generation but if some of us will only think a little bit, we will remember how short the time seems since we were little boys ten years of age and how short it seems since the boys we knew of the age of ten years are now men of 25. Children grow up before you realize it and properly managed, in the public schools, will have a powerful influence in this state to assist us in carrying out this work for the benefit of the public health. We can never get it by attacking these old hardheads who are set in their ways and ignorant and can not and will not be educated.

J. A. VALENTA.—Dr. Scott, just preceding me, spoke about the education of the masses in regard to tuberculosis and starting in the public schools the teaching of children, but, before we instruct the children, it seems to me it will be necessary to instruct the teachers. It will be impossible for teachers to instruct pupils without themselves knowing something about it. It will be absolutely necessary for physicians to instruct the teachers. This might be remedied by having a medical inspector of schools appointed to visit the schools and give these instructions and at the same time to inspect the schools at certain periods and have charge of the pupils and of all cases of suspicioned tuberculosis and in that way the difficulty might be checked in time.

E. HORNIBROOK.—I suppose that the discussion that has taken place here this evening will be looked upon as the highest expression of medical opinion on this important subject that can be found in Iowa and therefore, it is with a sense of responsibility that I take it upon myself without previous preparation to advance some views in regard to that disease, under discussion, which have not been brought out. The essayists have covered the ground with accuracy and precision. All they have said I can endorse. All they have said has been well said but notwithstanding that it has occurred to me that with all they have said in favor of the education and the instruction of the masses, that it would be scarcely right if some one did not raise his voice to protest against those influences which are tending to retard the proper treatment of tuberculosis in the only stage in which it is curable.

It will be in the experience of every man who has practiced medicine in any community, in the State of Iowa, no matter how advanced or intelligent he is in his profession, that his opinion is set aside, set at naught, not followed, in deference to the opinions of people who are not competent to form opinions at all. All of you have seen it as well as I. I was recalled to a patient on the day before I left home, who was then in such

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a state from tuberculosis that I thought her beyond cure. Not quite six months ago I attended the same lady and she was afflicted with with I called tubercular pleuritis. I came to that conclusion after serious consideration of all of the physical symptoms and to confirm it I had an examination of the excreta and the urine made and found in the urine unmistakable evidences of tuberculosis. I told the patient and her friend what I had found and course to pursue. I was dismissed from the case. An osteopath was called in, who of course, told them I didn't know anything about it, by replacing some nerve or bone or rib, the pain would vanish and she would be well in a short time. She took a course of osteopathical treatment, with the result that she is now on the road to the grave. You have the faith curer, you have the magnetic healer to direct and divert the people from following the directions of the family physician, no matter how conscientious he is, no matter how much pains he takes to inform himself, no matter how sound may be his instructions.

Again you have that other family adviser too often, the clergyman. His advice is apt to be taken. You have told the patient that with proper treatment he may be cured in his home. You have told him the fundamental principles that lead up to the cure of consumption but it may be that the clergyman has had some friend who may have had or may not have had the consumption and he went to Colorado and came back better. The drowning man, you know, grasps at a straw. He goes to Colorado and arrives there without a cent in his pocket to procure that which he absolutely knows to be necessary for the cure of tuberculosis. What result? The patient may get back, perhaps in a coffin, perhaps soon to occupy one.

Then you have the Christian Scientist who persuades the people there is no such thing as disease, that it all exists in the imagination and that all a patient has to do is to believe and pray and he will get well and then when the patient dies it is always the will of the Lord; it is not the fault of the doctor. The Christian Scientist always says it is the fault of the doctor.

Now, where are you going to begin? Are you going to commence in the common schools; are you going to begin in the legislature; are you going to begin in societies like this or are you going to get the people to understand that it is a communicable disease, having neither a chemical nor a medicinal antidote? It is something that can not be exorcised by prayers nor eliminated by anathemas. How are you going to get people to understand that a healthy organism, properly protected, without too much fatigue, without too much over-exertion, with proper food, possesses curative elements in itself which over-

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come the very elements which cause the disease? That is the view which the medical profession holds today. Medicine says we are able to correct secretions, able to restore disordered functions but that the cure of disease comes and must come from antitoxins with which nature has provided us, and that if the cells be strengthened and their life retained and proper conditions established, that every human organism has the proper means within itself of resisting disease. The baccilli of disease, like the poor, are always with us. Most of us carry the streptococcus, the most purulent of all germs, constantly in our mouths. It does no harm while inert. We carry most all of the germs of infectious diseases, but how to prevent those diseases is the education which the masses require. To resist and overcome them is the education which the people shall demand that the state shall provide for every inhabitant in the state and therefore I think it is a problem for us all to consider by what means such a result can be arrived at. I should like, sir, copies of these papers which have been read here this evening, to be printed and widely disseminated throughout the State of Iowa. I think by that means sound education could be disseminated among the people.

I have never felt a greater sense of responsibility than when people came to me with consumption and say, "Shall I go to Colorado?" "Shall I go to New Mexico?" "Where shall I go?" They say to me, "I have come to you to be cured" Not following in the wake of those who believe climate is the panecea for all ills I have said, "You can just as well be cured at home if you will take the proper measures." For twenty years I have been preaching that doctrine and I have been cursed and abused for doing it because the patient would not follow my advice. Therefore, I think that such a paper as read by Dr. Kime this evening, setting forth the best medical opinion of the day on the subject of climatology would be invaluable, if placed in a popular form in the hands of the people. Now, Mr. President, we are wealthy and I do not think we could make a better use of the funds of the association or one which would better promote the interests of the people than by having these papers and these discussions, especially those which precede mine, published in pamphlet form and scattered broadcast all over the country. I shall not make a motion to that effect. Perhaps I am too sanguine and think it would do too much good, but if the suggestion meets with the approval of the association they will, no doubt, take steps to disseminate this entire information.

G. F. Jenkins.—One point on the paper upon diagnosis. I believe in the microscopic diagnosis but I believe too many

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physicians are dependent too much on the microscope to make their examination and their diagnosis of pulmonary troubles. I believe there is a stage when it is very uncertain as to whether there is anything like bacilli present, until there begins to be some evidence of a secondary stage, a breaking down of the tissue, etc. I think we ought to pay more attention to the physical signs; they are well marked and any physician that will follow up the evidence in a painstaking manner and study the history of his case by all of the rational symptoms and make a careful and thorough physical examination and carefully test the patient's weight and carefully watch and re-examine and re-examine the patient, can detect the disease in its earlier stage, and in the first stage, temperature, loss of weight, pulse, and with other physical signs, can make the diagnosis at a time when he can do a great deal of good with treatment but if he waits until his microscope comes to his aid, he has waited too long, he has lost the golden moment and his case is not anything like so amenable to treatment as in the earlier stage. One point with regard to treatment—I believe in sunshine and in out door treatment, I believe in building a glass house with a roof to it and a porch all around it and screen it from the winds, I believe in fresh air and diet, but I also believe in medicine. I am not willing to throw away medicine in the treatment of tuberculosis. I know that I have both relieved and cured patients with creosote and with other remedies. I am not one of the kind of men that takes the books only. I take my own experience, as well as books. When I decide in my own mind that treatment benefits, I give it. These sanatoriums are all right, we should have them in our state and we should take pains to support them with our patients but we should not think that air and sunshine and diet will do it all—get all of the health you possibly can in the way of theraupetic remedies as well and that is my thought on the great subject of pulmonary tuberculosis. Get your diagnosis at a time when you can do something; do not rely too much on the microscope to make your diagnosis, because when the microscopist makes his diagnosis if he is a good diagnostician, along that line, he has already made his diagnosis some little time in advance. The microscope only verifies it, only makes it absolutely certain and I think that is what the paper brought out and it is an excellent point.

C. T. Lesan.—I wish to express my thanks to the members for this discussion. I will only take the time of the society to make one other point. Dr. Albert seems to favor the use of the guinea pig to make a diagnosis but says that it is not good in pulmonary tuberculosis on account of mixed infection. As I

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understand a mixed infection, infecting the guinea pig in pyemia will cause it to die early, if septicemia was the cause, it would die still earlier, while if tuberculosis was the true infection, it would die in three weeks and at that time an expert could tell whether the guinea pig died of mixed infection or tubercular infection. I wish to thank Dr. Jenkins for bringing out the importance of symptoms and signs. I said in my paper that the most important method of early diagnosis I believed was a true knowledge of symptoms and signs.

To the tuberculin test is another objection I did not mention in my paper; that is it does not point out the absolute location of the disease.

J. W. KIME, Fort Dodge.—Doctor Albert is absent and I will take up that point that Dr. Lesan mentions of mixed infection. As Dr. Albert called attention to we may have a mixed infection of the lung. We have a pure tuberculosis, pure bacillus of tuberculosis or we have the streptococcic in the mouth. In going to prove tuberculosis from expectoration, you have the mixed infection in the mouth. You have the bacillus from the lungs and the streptococcus from the mouth. If you, therefore, inject this mixed fluid in the guinea pig the streptococcus will kill the guinea pig before the tubercular bacillus get in its work. That was the point that Dr. Albert made. It is impossible to make this test on a guinea pig on account of the streptococcus killing so quickly. Diagnosis by the microscope is an old method of detecting tuberculosis. The presence of the bacillus of tuberculosis is a leading symptom of the disease. It means there is a laceration taking place there or that a laceration has taken place there. It means that the tissues are already broken down so that this secretion may be discharged. It is, therefore, one of the early symptoms of the disease. When we find it, of course we always know without any difficulty that we have the disease present. A mere tyro can find it out then. We must depend on the clinical symptoms of the disease for our earliest diagnosis. We will find the bacillus of tuberculosis in cases in which, upon inspection, we would not suspect that there was anything the matter with the individual at all. He may not have lost a pound in weight and yet he is expectorating bacilli and the disease is somewhat advanced in that case.

C. F. WAHRER.—Dr. Kime, you attach much importance in your early diagnosis to oscultation or percussion?

J. W. KIME.—I do to oscultation but not to percussion. I believe if we could see these cases at the very earliest possible moment we would find that increased heart action was the very first symptom we were able to detect, as high as 90 to 95, but the most marked and the first single symptom that there

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is in tuberculosis is the temperature. A great deal has been said in our text books about increased temperature in tuberculosis. That is, that at five o'clock, say, in the evening, the temperature rises to 99.5 or something of that kind. A great deal of attention has been called to this but even more important than this is the sub-normal temperature in this disease in the morning. I have yet to see my first case of early diagnosis, in which the morning temperature was not sub-normal. In almost every chart we made out daily the whole number in the morning, in early cases, are about 97, often as low as 96 and frequently as low as 95. If, however, we have increased temperature in the morning, in these cases, it is an advanced case and it is advancing to that stage where practically every one will die. I have never yet seen a case of tuberculosis in which the temperature in the morning was 101 and where it continued that way for two or three weeks, where the patient got well and I do not expect to. But, where we have that sub-normal temperature in the morning and the evening rise continuing for three or four weeks or more—and we cannot tell what that temperature change is due to—when there is almost a complete absence of symptoms and yet this temperature comes on in this way and there is increased heart's action, although you cannot detect a single symptom of lung disease at that time, if you watch that case a short time, you will find changes in oscultation. Those come first and they are most marked and a little later you will find your bacillus but you will then be coming into the advanced stages of the disease. You must not depend too much on heredity. One-half the cases I see have a clear record, fully one-half of them. The only one in the family, often times, is the one that comes to me. A great deal has been written on this question in the journals within the last year. Some even take the position that we are less likely to find tuberculosis where tuberculosis has at some time been present in the family on account of the immunity which has been established by the previous disease in the family. The question of exercise was touched upon. This question is an exceedingly important one in the treatment of tuberculosis. Too much has been expected of exercise. Too much has been done along that line; the poor patients have been run to death. The rule of all pathologists is this: If the temperature rises to 100 or 100 1-2 in the evening that patient must not be exercised. He must be kept at rest. If the temperature rises to 101 that patient must be put to bed until the temperature gradually goes down and in early cases it always does so. If the temperature is above 100 the patients are kept quiet. If below 100 they are moderately exercised. In the last month or so of

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the treatment, if the case is progressing favorably they may gradually increase the exercise. The best exercise is moderate and graded hill climbing. In all sanatoriums in this country, in incipient cases, more than ninety percent of the patients get well. It is likewise true that very far advanced cases of tuberculosis die, practically every one of them. In the treatment of tuberculosis with creosote I will say on that point merely this, that there is not a sanatorium either in this country or abroad which gives attention to this disease that gives one drop of creosote.

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HOME TREATMENT OF TUBERCULOSIS

L. J. BAKER, OTTUMWA.

By the home treatment of tuberculosis we mean the treatment of the disease at the patient's home or at the place where the disease was contracted and is therefore in this respect essentially different from climatic or sanitorium treatment. Unfortunately for its best success the teaching of former times that the disease when once contracted could not be cured or benefited, but rarely, except by change of climate has become the established belief of a majority of our people. Change of climate however is not within reach of the masses who are particularly prone to contract the disease by reason of their environments. If health and average life could be given to these people they would contribute much toward the development of the resources of the state and nation as well as aid in the solving of important sociological questions. Hence it becomes a matter of the great importance to the state that the question of their home treatment should be solved and that too at an early date.

This treatment may with propriety we think be divided into preventative and remedial.

Personally, I am free to say that if I could have my way about it I would not treat a case of tuberculosis at all for there would be no cases in the state to be treated unless they were smuggled in and these I would deal with like the National Government does pauper or Chinese immigrants. We thoroughly believe that there should be no more necessity for the existence of a case of tuberculosis in a town, city, or county of our beautiful state than there is for either leprosy or cholera.

One of the important considerations in the home treatment of tuberculosis is to make the patient and his friends thoroughly understand that the disease when taken under treatment sufficiently early is less fatal than typhoid fever. They must be taught and made to comprehend clearly that certain specified sanitary or hygenic measures must be carefully, faithfully carried out, not alone for their own personal benefit and cure but also to protect their friends and others from contracting the disease from them. When the patient and friends become convinced

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of the value of these measures there will seldom if ever be any trouble in having your directions fully carried out as laid down and your patient in all probability if not too late will be improved if not permanently cured of the disease. Here as elsewhere it is the attention paid to the common little things the so-called trifles, the things which the laity so often call nonsense, that will determine the success of your treatment. How often have we all seen and prescribed for patients giving them oral, written or printed instructions to be carefully observed and practiced; and, after leaving us we learn that they have talked with a minister, lawyer, druggist, or other person who made light of our instructions and in an assuring manner directed them to do possibly the very worst thing that could be suggested. The result is that the patient usually grows worse and is finally numbered with those who have not lived out half their days and the physician has another thorn added to his crown.

The first great and in fact the most important step in the prevention as well as the cure of the disease is the distribution of information upon this and allied subjects among all classes of our people. In other words our system of education must be broadened so that the children may and shall become as familiar with the common rules of health as they do with those of arithmetic and syntax. Of what value is it to the state to instruct its children in the common branches of an ordinary education and then have them die just about the time or soon after they have completed their schooling for the want of the very knowledge which would have saved their lives and made of them useful, healthful citizens.

We have for a long time been deeply impressed with the belief that it is one of the first duties of the state to educate its citizens in the general principles of sanitation and the premonitory symptoms of the preventable diseases. Without this or some similar system of education for the public good is soon adopted, years will probably pass by before men will attain to an age proportionate with animals; that is to about five times the number of years required for his physical development.

The small sum of five thousand dollars spent each year by the state in holding schools for sanitary instruction in various parts of the state to which all classes of people should be earnestly urged to be present and take an active part in its sessions would be productive of great good. Special efforts should be made among the men and women of the laboring classes at each place where a school is to be held to have them present and take part in the exercises. There are many, many, good minds among the laboring people that are quick to grasp and assimilate truths.

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Here is the leaven that will finally leaven the whole and ultimately prove that the stamping out of tuberculosis and in truth all other preventable diseases is not an iridescent dream.

The truths of yesterday are indeed not very often the truths of today. We must ever bear in mind that we live in the today and not the yesterdays. The people must be liberated from the false teachings of the past and trained to think and investigate questions for themselves that are directly concerned in their present and future welfare. It is high time that we should all learn that the advances of each day bring us nearer to ultimate truth.

Every case of tubercular disease should be promptly reported to the Health Officer of the district in which the patient lives. The premises should then be carefully and thoroughly investigated by either the Health Officer or some other competent person and a permanent record kept by that person of its exact condition and location and the patient and adjacent families should be furnished with printed instructions containing the latest and best methods of preventing the disease from spreading. The attending physician should then furnish the patient with the necessary information which if followed will if the disease is in its incipiency generally lead to recovery. The patient must be profoundly impressed with the fact that all of the sputa and excreta from the body must be thoroughly destroyed without being allowed to come in contact with any surface whereon it may dry and become pulverized.

The tenement houses in every township, town, and city in our state should be visited at stated intervals each year and the occupants thereof talked with and given some carefully formulated literature upon the subject of tuberculosis while at the same time the inspector should become acquainted with any slight ailment that may serve as a preliminary announcement of the presence of the disease. If these people find that a special interest is manifested in their welfare by the public and state they will not only take a greater interest in their own but they will acquire a degree of interest heretofore unknown in the well-being of others. The ward politician understanding this interest will always when he meets any of them inquire about their family and the neighbors, and sympathize with them in any of their misfortunes, ever aiming to keep in touch with them so that when he needs their help he knows full well that they will do his bidding. The state has or should have a greater interest in these people than the politician. To the state they represent a given capital placed at a normal rate of interest for an average number of years plus taxes and reproduction. The politicians' interest in these people is their vote and its value to

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him while the state's interest is production plus protection. All of which would be greatly increased by looking carefully after their health. Many people as well as families that are now supported partially or entirely by the state would not only become self-suporting but also producers of wealth both financial and moral.

The state should not allow the sale of milk or the making of butter or cheese for sale from any cow that has not passed an inspection by a competent and reliable veternarian who shall also certify that she is kept in good sanitary condition. Neither should food of any kind, especially meats be allowed to be sold without inspection. The character of food not infrequently furnished to the poorer classes is often abominable—damnable comes nearer expressing the correct idea. We have known hogs to be fed and partially fattened on animals that have died from disease to be butchered and sold in meat shops and peddled out among the poor people, as well as meats that were undergoing putrefaction. Of course such instances may not be common and may not always produce tubercular diseases yet they prepare the way, by enfeebling the system, for its development. To these conditions among the poor and even among those who are not so poor should be added poor cooking and the establishing by them of irregular hours for eating, rest, and work. Every thing which tends to lower the physical condition directly increases the susceptibility to the disease. Hence it becomes necessary first of all to improve the sanitary condition of the homes of the poor, and the quality of their food and cooking and to give them complete information on taking care of themselves so that they may avoid the communicable diseases.

Each child within our state should be taught that filth, expectorated matter, and the discharges of all animals whether well or ill, but especially when diseased contain more dangerous highwaymen than all the Robin Hood's the world has ever seen or will produce. They must be taught to protect themselves from the attacks of these insidious and invisible enemies by which they are constantly surrounded. They should be instructed as far as is known of their natural habitat, the manner in which they get into drinking water, air, and food; and the best methods for their distruction, and also the earliest known symptoms which they produce when they have gained a foothold in the body. When the children have once acquired this information and it becomes a working principle in their lives we will be able to successfully treat the few isolated cases of tuberculosis that may occur or find their way into our state.

The successful treatment of tuberculosis after the disease has been acquired depends very largely upon an early diagnosis.

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Hence it becomes necessary for us as practitioners of medicine to become more expert in diagnosing the disease in its earliest stages. We should never wait for an attack of pneumonia, influenzia, or even a cold to reveal to us its presence. The diagnosis having been made the next important step as before stated is to acquaint the patient with the nature of the ailment. Make a confidant of him and take plenty of time to explain the nature of his trouble, the care that he should ever exercise to prevent re-infecting himself and to keep others from contracting the disease from him, and that it may require a long time before he will be thoroughly cured. Having done all this you may now lay down the routine of his treatment. Be sure to make this complete, indeed it is often beneficial to have a general outline of this printed on a slip of paper so that he may have a copy to refresh his mind. Every thing which the patient does, the sanitary arrangement of his home, work, rest, and recreation must be attentively examined into by the physician. He must ascertain the percise nature and the manner of preparation of the foods which he eats and drinks and from them cut out all that is detrimental, making changes in the preparation of others if needed, and add such things to the list as will aid in building him up. The digestion must be carefully watched and a constant effort made to improve it. In some cases perhaps not more than one meal of solid food can be taken with benefit in twenty-four hours. However as much food as can readily be digested should be given providing the system can utilize it without overtaxing the organs of digestion and excretion. Do not overfeed but feed up to the limit of healthy digestion. Overfeeding in my opinion is likely in the majority of cases to prove more injurious than beneficial as the excretory organs are below normal and would be overtaxed and especially so if fever is present. The milk should be properly inspected and indeed often if not always sterilized before being used by the patient and when it is found to agree well it may with safety be consumed in large quantities. A part of the daily diet should consist of vegetables, fruit, and nuts. Foods should be properly cooked and made appetizing. When necessary artificial aids to digestion should be used. We believe that much more attention than is usual should be given to the feeding of the tuberculous and to their digestion.

The sleeping room and the dwelling of the patient must always be most carefully examined. Many valuable changes can very often be made in these no matter how poor the patient or his surroundings may be. The sunniest and best ventilated room in the house can be given up principally if not entirely to the occupancy of the patient. If there is plumbing it must also

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claim your attention. If the house is located over damp clay soil, or the cellar is damp and can not be speedily remedied if possible move your patient to a house better located. The country of course is always to be preferred. The patient will be better other things being equal in a room that is protected from the prevailing winds and dust. Keep the room well ventilated both night and day and admit all the sunshine possible—the more the better. It must be kept thoroughly clean and should not have carpets on the floor. Rugs, if desired and not too large, however, may, if movable be allowed, as they can be cleaned and dusted in the open air. The patient must leave the room before it is swept and dusted and should not return to it for at least an hour and a half or two hours. When the room is wiped up with a damp cloth and the dusting is done in the same way he may return earlier. The heating of the room is of great importance especially if the patient has night sweats so severe as to require change of clothing. If the patient is expectorating he must be provided with a common cuspidor containing an antiseptic solution or a sanitary one and thoroughly impressed with the necessity of using it on all occasions.

The personal hygeine of the patient must claim your attention at all seasons and times. The clothing must not be excessive either in winter or in summer. Sensible perspiration when at rest or even when moderate exercise is taken should never be allowed to occur nor on the other hand should the patient be permitted to chill. Be sure that your patient does not wear a chamois-skin, or heavy woolen or felt chest protector and that his feet are not to thinly clad. The selection of underwear is possibly only a matter of individual choice, yet I an inclined to think there is some virtue in linen especially during the summer and indeed often in the winter. Linen rapidly absorbs sensible perspiration and I believe that it enables the skin to perform its functions even better than either cotton or wool.

Young persons, more especially fashionable young ladies are as a rule more difficult to handle properly with reference to dress than older persons. Often indeed they will not admit that they are ill and will seldom fully comply with the necssary requirements of personal hygeine. They will cling to the corset, low neck and short sleeve dresses, slippers and thin soled shoes. The chest, arms, and legs should always be well protected from the sudden variations in temperature.

The skin in order that it may perform its physiological functions as nearly normal as possible must be kept clean and sweet. For this purpose it is necessary that the patient should have warm or cold rubs or baths frequently. In giving either the rub or bath the water should not be so cold that when followed by

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brisk friction there is not a prompt reaction shown by the presence of warmth and glow. In beginning the rub or bath, water below 95 degrees should never be used unless the patient is accustomed to taking them colder. It is somewhat questionable whether water below 65 degrees of temperature should ever be used. The cold rub or bath is generally preferable to the warm because the results as a rule seem to be better. The cold rub or bath is not however permissible in the very anaemic, or in cases of acute inflammatory processes involving the lungs, where diarrhoea is present, or during the menstrual period, and in those cases where there is a marked tendency to pulmonary hemorrhage. These rubs or baths should generally be given each day. Perhaps as good if not the best time to give them is in the morning before breakfast and before dressing for the day. It is often and indeed I am not quite certain but always better to precede it with a glass of hot milk or w ak hot coffee.

A very important point which possibly is too often neglected is giving sufficient care to the mouth and teeth. In the morning before taking nourishment the teeth should be thoroughly cleaned and the mouth cleansed with an antiseptic wash especially when there is expectoration. And I would earnestly advise this cleansing to be repeated each time before the taking of nourishment and if there is much expectoration even more frequently.

Cell nutrition and elimination can not be normally maintained in health without an amount of exercise and rest sufficient to sustain the proper balance in each individual. An increase of either within certain limits and under given conditions aids and promotes development but when carried beyond they debilitate and promote the aggressive action of disease. Hence it behooves the physician to study well the individual's physical peculiarities as well as his temperature and the condition of the heart before he determines upon the amount or kind of exercise each patient with tubercular disease requires. He should also learn approximately the amount of exercise taken before the disease developed as well as immediately before coming under his care. With these facts in his possession he can better formulate the amount of exercise that may be taken each day as well as the character of the exercise best suited to the case. Under no circumstances should the exercise be carried so far that the pulse shows heart strain. If the pulse are weak and rapid do not exercise your patient, and if they become so during exercise stop it at once as you are beyond the confines of safety and are whipping a weak heart to over-exertion and posibly to rebellion and death. The object aimed at is to give the patient all the exercise permissible in the case but without producing

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fatigue. The exercise should always be taken with regularity followed immediately by perfect rest. It is well to always have the pulse taken regularly three times a day and also just before taking exercise and immediately thereafter which should be made a part of the daily record. By this means the physician can better determine when the exercise can be lengthened or increased in frequency. A patient who cannot walk on the level for from forty-five minutes to an hour without producing heart strain should not be permitted to walk up stairs or even to ascend a hill with a gentle grade, nor allowed to ride in a carriage. With increased strength of the heart and increased nutrition the exercise may be prolonged and increased in variety and even light labor both physical and mental may be added. These exercises should be systematically increased and continued until the patient has entirely recovered but always, however, being under the direction of the physician. No form of exercise should ever be taken that has not the aproval of the attending physician. He alone must supervise every detail as long as the case remains in his charge. Unless he does there will be many irregularities committed by the patient and friends that will delay the recovery if not prevent it entirely. It is in the treatment of these cases that the physician must possess the qualification of an autocrat tempered with kindness and diplomacy. His will must be supreme and his directions carried out to the very smallest detail. Indeed the patient should remain under the supervision of a physician for a long period after his recovery. The sanitary condition of his residence as well as the place of employment should always have his approval for the patient is liable on slight provocation to have a return of the disease for some considerable time after his apparent recovery.

The use of the sanitary or even the common tent with a floor somewhat elevated when suitably located is always to be preferred to a residence for the treatment of all cases of pulmonary tuberculosis when the patient can be prevailed upon to live in one and to comply with the other requirements. Unfortunately however we can not at present prevail upon but few of our tubercular patients to occupy a tent for but a short time. Probably partly upon the account of lonesomeness and partly from lack of confidence in their virtue. I am thoroughly convinced that more can be accomplished for the relief and cure of this disease in any of its stages when the tent is properly used as a place of residence than can be secured in any tenement and in fact other residence. My confidence in its usefuless is such that I will endeavor to have all of my cases of the disease to live in a sanitary tent such as Gardiner's or a simliar one if they can

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afford it and if not then I shall urge them to have a floor made in a common tent and live in it.

The medication of a case consists principally in giving remedies to aid in correcting irregularities in digestion and excreton and to assist in tissue building.

In conclusion I desire to say most emphatically that the home treatment of tuberculosis which will yield the highest, best results is entirely preventative and consists in the proper education of the whole people and not a few of the favored ones. Of what benefits is it to a patient to undergo the above outlined or in truth any other form of treatment and recover if he has to return to the same or worse exposure and live for the want of means in an unsanitary house, located probably in the worst part of a town or city and perhaps have to work in a mill or factory where suitable provisions have not been made for the care of the dust and smoke and where persons with pulmonary tuberculosis are employed and are expectorating promiscuously over the floor or about the building. Here the sputum soon dries and from the necessary tramping of the workmen, the moving machinery and various materials it is rapidly ground into a fine powder which mingling with the dust is taken into lungs already weakened as a result of a former attack of the disease where the germs find suitable soil for their development and can at once enter upon their destructive mission.

Is it not high time that we combine our efforts as physicians and insist upon proper sanitary legislation and the education of the masses along this line? We do not hesitate to say that we believe that sanitary education is one of the first duties of the state. It would require the appropriation and expenditure of but a small sum of money bi-ennially to create an inspiring enthusiasm among the masses and to place our state in the best attainable sanitary condition. One in which the citizens would vie with each other in maintaining and improving. Then indeed will the loss sustained from the numerous dens of robbers and murderers which infest our state and known by the name of dangerous communicable disease germs be far less than that from human kind. Thousands of dollars are paid out of the public funds every year to persons employed to hunt the latter down and after they are caught thousands more are expended in trials, conviction, and maintenance. In many instances the loss sustained from one or more of these by an individual would not equal one-fourth of the loss sustained from a mild attack of typhoid fever. If the actual loss to the citizens of Iowa from tubercular diseases each year was converted into dollars and cents, it would exceed by many thousands of dollars the loss from human murderers and thieves. If these facts were properly

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and forcibly presented to our citizens by the physicians of our state who understand the situation and who have the interest of the public at heart, we firmly believe the people ere long in their might would rise, demand, and receive from the legislautre at least as much protection from the ravages of tubercular and even other dangerous communicable diseases as is now given them from the human murderers and thieves. The sanitary policing of our state would be reorganized making it more systematic and effective by placing men in the respective positions who have a reasonable working knowledge of the laws of Public Health, and who are kind, diplomatic, and firm. Sanitary science would be required to be taught in the public schools throughout our state. And all persons who desire to teach in them will have to possess as much knowledge of sanitation as is now required of them in the elementary branches. The school, tenement-houses, public, and manufacturing buildings will have to be located and constructed with special reference to the preservation of the health and the protection of the occupants. Persons with tubercular or other dangerous comunicable diseases will be requested to conform to improved sanitary regulations. Our children will then be enabled to attend school and our citizens to engage in any avocation without endangering their health or lives from the "great white plague" and even other communicable diseases. Then indeed Iowa will not only have solved the problem of the home treatment of tubercular but also that of other communicable diseases. And they like cholera, typhus fever, and other dangerous diseases of the past will be known to the citizens of our state in the future only by importation or through history. Then can the citizens of Iowa, the grandest, best in the great galaxy of states, with pride and truth point the fact out to the world that she not only has the smallest percentage of illiteracy but also the smallest per cent of sickness and death from tubercular diseases.

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THE VALUE OF VITAL STATISTICS

L. A. THOMAS, RED OAK.

The subject of Vital Statistics may seem to some dry and devoid of interest, but to students of political economy and the various sciences it is as important as the Mariner's Compass and Chronometer to the Navigator.

The Medical profession of the 20th century stands before the world as the acknowledged benefactor of humanity. From the cradle to the deathbed man claims and receives as his due the advice, care and thought of many a lifetime expended in scientific research of nature's hidden and intrinsic mysteries. As the finger of Time marks the opening of each succeeding decade the demand of man is for more, more thought, more knowledge of this enchanting mistress Science.

The scope of our efforts to alleviate and prevent disease is to a large extent limited to a retrospective of Vital Statistics, and our calculations must be based upon the experiences of the past, and the relative prospects of the future. Upon the accuracy of these statistics depend the value of our deductions.

Were it not for the use of borowed statistics we should today be no further advanced in many of the sciences than were our forefathers of the 17th century; for with all her boasted progress the United States has been almost entirely dependent upon the records of European countries.

The miner laboring in the bowels of the earth without the aid of a lamp to illuminate his path is not more helpless than the medical scientists without the aid of Vital Statistics

The natural tendency of the age is toward enlightenment on all subjects; but as the masses are always more or less incredulous regarding the necessity for radical changes in our laws or modes of living, and as the American mind is more impressed by figures, than by bare statements, it is essential that facts be portrayed in accurate figures, and these can only be obtained by full and carefully collected statistics under official direction.

No financial enterprise could be developed or carried to a successful issue without an exact knowledge of its resources and expenditures. How vastly more necessary it is that a nation, a state, a city or a township should at all times maintain an ac-

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curate record of its birth, and the social particulars pertaining to each; of its marriages and data concerning each participant; of its deaths together with the primary and contributing causes; the age and individual history of each. Such a system of bookkeeping has become a necessity to the commercial, social and sanitary interests of the land and those states whose citizens awake early to a realization of their duties and responsibilities in this matter will reap harvests in proportion to the accuracy and completeness of their system.

In municipal affairs Vital Statistics are of the utmost importance. The officials require accurate annual statements regarding these matters to enable them to anticipate the requirements of the future and provide necessary appropriations for each department of the public service.

The tax payer should likewise have the opportunity to inform himself as to the conditions and necessity for these expenditures.

The business interests of a private individual suggests an annual invoice of his holdings and liabilities. Common sense would seem to advocate a like policy for a municipality.

Every citizen of Iowa, be he physician or layman can and should contribute to the success of this movement; but upon the physician, the lawyer, and the school teacher must necessarily devolve the duty of educating the masses. It is particularly within the province of the doctor and lawyer by precept and example to stimulate their clientage and impress them with the national and sectional advantages resulting from accurate and complete Vital Statistics.

The college professor and school teacher should emphasize the importance of this subject in relation to Political Economy. The most valuable laws are often rendered inoperative and become obsolete through lack of judicious training of the childhood of our nation. And this fact is largely due to the growing tendency to regard a citizen of the United States as a being having a law unto himself; accountable to no higher authority and having but little care or respect for the rights of the community whenever such comunity interests conflict with his individual convenience.

The instructor should impress upon his pupils that the law is omnipotent, and that the test and proof of good citizenship is prompt and exact complience with the law of the land, and a disposition to advance its interests.

The accurate and complete registration of births and deaths is necessary in every branch of Sanitary Science, for in order to correctly understand the nature of disease and the remedial measures that should be taken to guard against them, we must

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have an accurate knowledge of the movement and density of population and the authentic cause of death.

The official registration of births is frequently a matter of serious moment to the future of the child. In most European countries a certified copy of the record of birth is a prerequisite in proving title to inheritance, and for entrance upon governmental and certain other employments. The accession of the United States to the dignity of a world wide power with her numerous and varied interests in every quarter of the globe makes it probable that her future developments and success will depend largely upon her present ability and willingness to safeguard the future interests of the children of her citizens, and the same is applicable to the interests of each individual state.

To accurately estimate our strength we must know our weakness and place ourselves in position to intelligently correct the errors and defects of our race. As the highest speed of the slowest vessel regulates that of the whole squadron; as the strength of the entire chain is limited to the tenacity of its weakest link, so must the strength of our nation be estimaed by the attainments of the most backward state.

The people of the United States who are engaged in the various live stock industries have for many years recognized and appreciated the value of authentic registration of live stock, so that today each individual breed has its official register, and the pride of the owner and the intrinsic value of the individual animal is proportionately enhanced by the achievements of its officially recorded ancestry. Through the maintenance of accurate registration intelligent breeding has become possible; undesirable traits of disposition, anatomical and systematic defects have been eliminated and the most desirable characteristics preserved and intensified. This exactness is required of the lower animals simply to increase their money value.

In the human race, especially in the United States, the present tendency is toward deterioration. Marriage and inter-marriage; the propagation of innocent children with weak constitutions, congenital deformities, mental or physical defects and undesirable hereditary tendencies are of every day occurrence. Scientists long ago recognized these conditions, and have labored to offset this tendency, and improve the physique of children yet unborn; but their efforts are handicapped by the fact that our Vital Statistics are so incomplete, inaccurate and generally unreliable as to be almost useless for all practical purposes.

Some people are opposed to official collection of Vital Statistics on the ground that the contents of a public record might

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embarrass individuals or their offspring, and the publication of compiled statistics prove injurious to the interests of a given community.

Under certain circumstances the first objection may appear reasonable. The exposure of family skeletons is not always advantageous to the personal interests of an individual, but when the welfare of state and nation is involved, personal interests must be held subordinate. We also contend that an accurate official record of the actual cause of death is more often a source of benefit than of injury to lineal descendants.

Those about to contract marriage should have opportunity to scrutinize the family history of their prospective fiancee. Unwise matrimonial alliance and subsequent entail of misery or sorrow to both might thus be avoided and the world spared a reproduction of hereditary weakness. The marriage state would be entered with more serious consideration of its results to posterity. Physical and mental deterioration would be arrested. We should have fewer divorces and fewer subjects for insane asylums. The crimes of homicide and infanticide would be more difficult to conceal and the additional means of detection would in a measure prevent their commitment.

An incorrect statement of the cause of death may prove a source of gross injustice to descendants. As applicants for life insurance, they are often rejected or deferred because of an implied taint in their ancestry. But were the correct facts obtainable they might be accepted without question.

Inaccurate or partial statistics are misleading and worse than worthless; but an accurate and complete system officially compiled cannot fail to be beneficial to all mankind.

The second objection is devoid of logic. In some localities land values are lowered on acount of the supposed prevalence of typhoid or malarial fevers; but no evidence worthy of intelligent consideration is obtainable to show which, if either of these diseases is responsible for the loss. Consequently those whose interests are involved must grope in semi-darkness for methods of eradication or prevention; their atetmpts at improvement are spasmodic and lack uniformity; thus failure is their portion and the loss recurs year after year.

No community could be injured by the compilation and publication of accurate Vital Statistics. For instance: The official record of a certain town or county shows a satisfactory freedom from disease and a coresponding longevity among its inhabitants; the inference is that the environments are good and the people zealous in their citizenship. These facts will attract new residents and investments; thus enchance the value of property. On the other hand should a community harbor disease

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or pestilence, the fact will invariably be shown through the aid of accurate mortuary reports; the true nature of the ailment will be detected and if the inhabitants are disposed to heed the "handwriting on the wall," they will be quick to realize the necessity of protecting their financial and personal interests; they will act promptly and in unison, adopting rational measures to bring their surroundings to a healthful standard. Health means wealth, and an accurate and complete system of Vital Statistics will in a large measure assure both to the people in every section of Iowa.

In this 128th year since the birth of the United States, only nine of the forty-five states forming the nation have anything approaching a satisfactory system of Vital Statistics.

Iowa, after 59 years of statehood, has no authentic record of the origin and individual history of her inhabitants, or of the vital facts pertaining to them. Previous to 1897 the law required physicians to report births and deaths to the clerk of the district court. The results of this method were soon demonstrated to be unreliable and generally unsatisfactory. But notwithstanding this fact the legislature neglected to make any other provision.

During the revision of the Code in 1897 a section was inserted requiring the assessor to report all births and deaths occuring in his district during the preceding year. This proved an ignominious failure from the very date of its enactment.

Early in the sesion of the legislature just closed an effort was made by the Iowa Health Officers Association in conjunction with the State Board of Health and the Unied States Census office to secure the enactment of a bill especially drawn and well adapted to the requirements of Iowa. This bill embodied the best thought of those in position to recognize the failures of the past, and indicate what measures were necessary to insure satisfactory results in the future. The bill was referred to the committee on public health; but unfortunately the members of that committee, with but few exceptions were totally ignorant of the value of Vital Statistics, or what was necessary to obtain them and they seemed disinclined to exert themselves sufficiently or devote any time to inform themselves regarding the matter. The bill therefore died in committee notwithstanding that a large proportion of the General Asembly were prepared to vote for the enactment of its main features.

During the last few days prior to the close of the session another bill was introduced at the instance of Dr. Cressy L. Wilbur of Michigan, and rushed through both houses with but

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little consideration, many of the members believing it to be a curtailed edition of the original bill, whereas as its actual resemblance went but little further than the title.

This new law can be nothing but a disappointment to friends of the cause and may even jeopardize chances for more satisfactory legislation in the future. It re-enacts features proven to be utter failures in this state, and entails an endless amount of superfluous bookkeeping upon the State Board of Health, it being necessary to keep the financial accounts of over 8,000 registrars by the month and year whose compensation is provided for in 10, 15 and 25 cent items.

There is no appropriation to defray the expenses of mailing or for the necessary additions to the clerical force of the state office. While from some aspects this law might be deemed a step in the right direction a close analysis will reveal it to be perplexing and generally inadaptable to Iowa for though short in form it is loaded with impracticability and it is doubtful if its operation will produce any more reliable statistics than has the present imperfect method.

Even supposing the statistics obtained through the operation of this law were sufficiently reliable to be of value, there is no provision whereby they could be compiled and published.

To every member of the Medical Profession the subject of Vital Statistics should be replete with interest, and each should use his influence and personal efforts to inaugurate and maintain such a system as will fully meet all requirements. Always bearing in mind that the only system likely to prove successful must be concise, free from ambiguity and easy for administration in every section of the state.

Let us therefore unite upon a satisfactory system, and see that it becomes a law two years hence.

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SMALLPOX IN WORTH COUNTY, IN 1899-1900-1904

J. HERBERT DAREY, A. M., M. D., C. M.

It was my fortune to be the first physician called in the two outbreaks of smallpox here recorded, and though my personal experience has been limited in this disease, I have been materially assisted in the preparation of this paper by my colleagues Dr. C. A. Hurd of Northwood, and Dr. C. W. Sanders of Manly, who have kindly placed their notes at my disposal. Both outbreaks originated in Minnesota, which seems to have a pretty constant supply of smallpox on hand most of the time, especially in the northern part of the state, in the lumber camps and mining regions, far away from civilization, where it is very difficult to enforce the excellent quarantine regulations of the state.

On December 5th, 1899, T. S., aged 29, clerk, single, consulted me in my office, and informed me that he was afraid he had smallpox. He stated that on Nov. 22, he went to Albert Lea, Minn., on business, where smallpox was epidemic at the time. On Nov. 30th he had a high fever, and felt indisposed, but ascribed it to a cold. He felt indisposed from that time on. On Dec. 2nd he noticed a few pimples on his legs. He accidentally felt them while dressing, but considered them of no significance. On Dec. 3rd he consulted a physician in a drug store, and told him he was afraid he had smallpox, as the rash had considerably increased. The physician told him, his stomach was out of order, (as it undoubtedly was,) and prescribed Nux Vomica as a tonic. He felt better next day, and did not report. On Dec. 5th as the rash continued to spread, he called at the physician's office, but found him out in the country. Then he came to me. I striped off his clothes and found a well marked case of discrete smallpox in the vesicular stage. It was impossible to lay a half dollar any place on his body, without touching a poct. Temperature 101.5, pulse 86. I at once notified the mayor, who ordered Dr. C. A. Hurd, the city physician, to examine him. Dr. Hurd concurred in my diagnosis, as did Dr. T. M. Stixrud, who was also ordered to examine the patient. He was promptly quarantined in a store building, and a male nurse hired to attend him. Then bedlam broke loose in the

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town, cries of "Cuban itch," "Philippine itch," "chickenpox," "ruin the holiday trade," etc., were heard on all hands, till the mayor, at the instance of a number of the leading citizens, did what I requested him to do on the start, viz;—request the state Board of Health to send an expert to Northwood, to see if it was really smallpox or not. Dr. J. C. Schrader of Iowa City, president of the State Board of Health, came up in a couple of days, and pronounced it an undoubted case of variola. This silenced the kickers, and no further trouble to speak of was experienced in the management of the case. He had quite a high secondary fever, temperature 103.5, when the vesicles suppurated. His mouth was full of pustules, and he had five on the head of the penis, and several on the eyelids, though fortunately for him none developed on the cornea. This was the first case of smallpox Drs. Hurd, Stixrud, and myself, had ever happened to see, and we were much encouraged, and eased in our minds, by Dr. Schrader's confirmation of our diagnosis.

For the following notes on forty-one cases of variola, and two of varioloid, I am indebted to the courtesy of Dr. C. A. Hurd of Northwood. The doctor had a very hard task to perform in Silver Lake township, where the people refused to be quarantined largely, as he says owing to the statements of a physician in another town, who backed them up in their obstinacy. He took full and careful note of twenty or more cases, and sent them to Dr. Kennedy of Des Moines, secretary of the State Board of Health, who pronounced them undoubtedly cases of variola, in a mild form. Armed with Dr. Kennedy's statement, quarantine was strictly enforced afterwards.

"Seven cases in the family of Ole K. Sanda, one confluent, one girl five years old, all symptoms, but one pustule on body, on third finger of left hand. All recovered. Father was first to come down, had been vaccinated while young. Mrs. Sanda and her sister were present. Were vaccinated when young, did not take the disease. One boy eight years was vaccinated after the father had been taken sick and did not take the disease.

Thirty cases in Silver Lake township. None had been vaccinated.

Two semi-confluent. All recovered. In one case where a young man was quarantined with the disease, two young ladies were also quarantined with him to nurse him. They at first refused to be vaccinated but when the disease reached the pustular stage, were quite anxious, and were both vaccinated, and both escaped the disease. The young man was very sick. Recovered. These two girls were the only ones vaccinated in Silver Lake township. The rest refused. A doctor in a neighboring town told them it was "Cuban Itch," and in many ways made the

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task of quarantine very difficult. One case of variola in Northwood. Vaccinated twelve years ago. Recovered. Two cases in Deer Creek township, both females. One girl was in family of seven children. Was in pustular stage when other children were vaccinated. The mother refused vaccination, said she had been vaccinated once. Had varioloid. Recovered. Saw two cases in consultation with another physician, mild form. Both recovered. The disease in the majority of the cases seemed not to affect the true skin, and left no evidence of the disease. Secondary fever not marked but in a small number of the cases. No person took the disease who had been recently vaccinated. If vaccination did not take, the disease did not."

These cases were all derived from Albert Lea, and farms in Freeborn county, Minn., which joins Worth county on the north The authorities of Albert Lea, tried to hush up the matter on the start, and allowed a street fair to take place in Albert Lea, when it was known that smallpox existed in the city, to which all the surrounding country was invited. Dr. C. W. Sanders of Manly, has kindly furnished me the following notes on cases in several epidemics. He mentions cases in 1886 and 1902, which are out of the proper scope of this paper, but as his notes are so full, and his remarks so judicious, I will insert them in full.

"The Barton township epidemic in 1886. Thirteen straight cases. Five confluent, eight discrete. In addition to this three cases varioloid in patients between 33 and 41 years of age. These had been vaccinated under six years of age and vaccination had not been repeated. They were not sick enough to need any special attention. No deaths resulted from this epidemic. One complication, patient 29 years of age. Aborted at about third month. Was seriously sick, but recovered, and in two years and four months after that gave birth to a healthy child. During this epidemic I vaccinated 487, not counting re-vaccinations. Out of these thirty-one failed to work. I could not follow the re-vacination but only a few secured results. And they were these whose vaccinations were over ten years duration. In these, results were easy with little or no constitutional disturbances.

"The Danville Center Epidemic, occuring in Dec, 1899, and January, 1900. Twenty-eight cases. One hemorrhage in pregnant woman, who had miscaried at 7th month, on second day of secondary fever, and died seven hours after delivery. This patient had suffered great neglect. No help of any kind had been sought for her until about four hours before delivery. Neither she nor her ancestors back to great grandparents had ever submitted to vaccination. Three confluent cases of moderate severity. The remaining twenty-four cases were of the discrete type

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and were very mild. Several of them so much so that disputes were raised as to the accuracy of diagnosis. Three hundred and thirty-five vaccinations were made by me, all told and many more than that by my colleagues, Drs. Phillips, Graesser and Hemphill, who at this time were not treating smallpox. During this epidemic special attention was given to this principal of vaccination.

"1st—All persons who were vaccinated were immune from this trouble, be it smallpox or not. (I desire to distinguish between vaccination proper, and a light make believe, which neither vaccinates or protects).

"2nd—That no serious troubles in the ways of losing arms, legs, or lives were experienced, by any of us. Due care and instructions were given to all to avoid infection, and not even one complicated case came to us on this score. During this epidemic I vaccinated seven pregnant women, their time varying from six weeks to six months, without injury, or pathological incident. These women either had smallpox in family or were exposed, in every instance the mother was protected.

"3rd—Those who had had the disease however light could not be vaccinated. This I tried on seven who had had the eruption light, and though it was tried on two the third time no results could be obtained. The best method of overcoming prejudiced and unreasonable objections to vaccination was to state gladly that this virus is expensive, and hard to get, 'and now, Mr. Wiseman, if you would rather not have it used on your family, Mr. Needit is very anxious to have it at once, as he can ill afford the quarantine and the sickness, while you are well to do and would not be seriously inconvenienced should the sickness come.' In about three days, 90 per cent of these will complain of unfair discrimination, and loudly demand their rights, making good the adage, 'When you learn which end of the pig the head is on you have no trouble in driving him.' The Union Township epidemic in 1902, with one case in Manly, was unimportant, only five cases in all, and of the mildest form. Nothing was done only to live up to the quarantine requirements. About twenty-five vaccinations were made, but everything had been done so thoroughly before, that the trouble could not spread."

The hemorrhagic case in a pregnant woman, he mentions in the Danville Township epidemic of 1899-1900, was derived from two women, who came to the vicinity from infected homes in Silver Lake township, where Dr. Hurd had so much trouble in geting the township authorities to enforce quarantine.. The death of this poor woman did a great deal to open the eyes of

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the public to the fact, that though the epidemic was light, still grave cases might occur at any time. Dr. Sanders informed me that the child was still born, and had a well marked rash.

On Dec. 28th, 1903, T. S., aged 28, farmer, married, with two children, consulted me in my office about a rash that he had discovered two days before, while combing his hair. He had recently returned from Atkin county, Minn., where he had gone to take up land. He and a brother-in-law aged twenty had slept in a shack with two settlers, who had a very itchy, peculiar rash. My patient had had the "itch" and knew how to cure it. He stated that the two men in Minnesota did not have the "itch" as he knew what that was like from personal experience. He did not have the "itch" himself or he would not have come to see me. He gave history of not feeling very well for some days after his return to Northwood, about Dec. 14th. The two men in the shack were out at work all the time in the snow, but had an intolerable itching all over their bodies, which accompanied a rash. It afterwards developed that a wandering Italian had slept in the shack a few weeks previous, and he no doubt brought the "itch" with him. One of the two, a young Englishman, was confined to bed for some days after my patient left Aitkin county. I thought the case very suspicious from the history and symptoms. He had a temperature 100.5, pulse of 88. Dr. E. H. Dwelle of Northwood, who happened to drop into my office while the patient was there, looked him over with me, and concurred in my suspicions. He had a popilar rash all over his back his face, (though not very plentiful there) and in his hair, and on his arms and legs. We found only two or three vesicles, which were not umbilicated. I told him to go home and stay there till I went out next day to see him, and warned him that he probably had smallpox, and ordered him to stay on his farm. On my visit next day, I found three distinct pustules, one on his forehead near the hair, and two on his back. I then made a positive diagnosis of variola, and reported him to the State Board of Health and to the Township Board of Trustees, who very promptly quarantined him. I also notified the secretary of the State Board of Health of Minnesota, and received a very courteous reply informing me that he would at once send a health officer out from Aitkin, to the camp, twenty miles away, where the patients had the "itch."

The case was a mild one, and followed a normal course. There was very little secondary fever, and the patient was out hunting jack rabbits on his farm, before I allowed him to go out of doors. He first consulted me on Monday. The day before, Sunday, several young people were at his home visiting. They were all quarantined for exposure. One girl was working

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out at a neighbor's where there was a new born child. Two of her sisters were also there. There are nine children in the family none of whom had been vaccinated. I vaccinated them all, the father as well, who had never been vaccinated. The mother had been vaccinated as a child in the old country and refused to be vaccinated. My patient had two little children, whom I vaccinated. His wife was eight months' pregnant, and at first refused to be vaccinated. Her sister, a girl of sixteen, was vaccinated. The brother-in-law, aged twenty, who had been up in Aitkin county, Minn., refused to be vaccinated. He never developed the disease, though he was quarantined in the house, did the chores, acted as nurse, etc. There are seven children in the patient's wife's family, all of whom I vaccinated, with the father and mother. They lived only a quarter of a mile away, and had mingled freely with the patient's family. In a few days I removed Mrs. S. to her father's home, so that she might be confined there and after considerable persuasion, induced her to be vaccinated. It did not take. In due time she was confined of a healthy girl. Her other children, whose vaccinations were unsuccessful, developed a rash of the same sort, which I did not see, as I was out of town. One of her little sisters had a rash, which was seen by Dr. H. B. Graeser of Kensett, in my absence, and which he considered to be chickenpox. The child's vaccination had been successful, so it is certain it could not have been variola. Dr. Graeser informed me that he found a few dried up scabs on the two S. children, the nature of which it was impossible to determine. As their vaccinations were unsuccessful, it is probable that they had a mild type of variola, or possibly varioloid. No further cases developed, on account of the prompt measures taken to quarantine all families exposed, three in number, all of whose members were vaccinated, except the mother of the nine children, who had been vaccinated years ago. No bad arms developed, or unfavorable symptoms of any kind. I vaccinated thirty persons in the outbreak, and Dr. Graeser vaccinated four.

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SECTION OF MENTAL AND NERVOUS DISEASES

REPORT OF CHAIRMAN MAX E. WITTE.

While the past year has produced no epoch-making-discoveries in the fields of Psychiatry and Neurology, nevertheless much valuable though as yet unknown work has been done in these fields of human endeavor. Many patient, gifted and conscientious investigators, armed with improved and improving technic and facilities for scientific exploration, are at work to advance our certain knowledge. That this advance is not more rapid and conspicuous lies in the very nature of the problem, which is only a particular phase of the great master problem of existence, propounded by the questions, what? how? whence? whither? Questions which have occupied the most exalted intellects of mankind for ages, but whose answer, alas, is not yet forthcoming. The Sphynx is silent, and we may not know perhaps, until "this mortal shall put on immortality."

When the philosopher Jacobi while in Paris in 1801 was presented at a general audience to the then first consul, he was asked by the latter: "Quest ce que la matiere?" What is matter? Jacobi was silenced for he could find no answer on the spur of the moment, and Napoleon at once turned his back upon him.

After a century of boasted and really astounding progress, we are in no better position to answer Napoleon's question.

In the world of phenomena, we can only know of it by its effects on our senses, that is in its relation with or exhibition of force. Molar effects are simply the resultant or summation of foces associated with the molacule, the atom or still more minute corpuscle. You well know that our conceptions and notions touching the dynamics of the indefinitely little have in recent times received such destructive shocks, that we have been jolted out of much what we considered certain knowledge, and in certain respects are again groping and seeking for light and certainity.

Matter, so far as we know of it, is found in its most highly organized and complex form in the cell of the gray rind of the human brain. It is axiometic to say that the more complicated an organism or even mechanism, the easier its derangement, the more difficult is its investigation. Psychiatry, like science

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elsewhere and at other times, has labored under the disadvantage that its peculiar problems were not thoroughly understood and formulated. The fields to be investigated were thought to be of a much more simple and circumscribed character than is really the case. Thus at most institutions and hospitals for the treatment and care of those afflicted with mental and nervous disorders, a pathologist was maintained whose specific functions were supposed to be the investigation of the morbid histological changes, basic of these disorders. With few notable exceptions the result has been the storing away in more or less well arranged cabinets, isolated or serial sections of brain or other nerve tissue, and the desultory publication of meager reports of the post mortem findings. That other considerations enter into the problem, and that the same must be attacked from many sides, was realized only by a few. The microscopical and chemical study of structural changes is important and should not be undervalued, but it is not all. We can judge from the ruins of a house somewhat of its dimensions and general arrangement, but from it we cannot know much of the life and intelligence that at one time dwelt within; of the energies and activities of manhood; of maternal cares, hopes and labors; of childhoods unfolding and blooming; of the pleasures and comforts of home, of the guests, corporeal and sipritual, that came and went. No more, can we as yet conclude from a degenerated nerve fibre or differentially staining neuronic content, as to the existence, nature, origin and persistence of a disturbed association, a perverted emotion or an obliterated primal impulsion. The problem is deeper and much more difficult, and the subect must be also studied ante mortem, even ante morbum, while vital and psychical activities are dynamic and not static. That the number of investigators along these vastly enlarged lines is increasing, is a bow of promise for the future. You and I can help directly and indirectly in the sublime quest. What grander theme can occupy our intellect? "The noblest study of man is man." Man's crowning glory is mind. To you and me in our various capacities, is more frequently and openly revealed the inner life of our neighbor, than to any other, in any other profession. To be successful we must be able not only to observe accurately what is patent, but also to elicit what is hidden, and then to weigh truly the evidence so obtained so that we may form just judgments. We do this in diagnosis for the physiological side of man, but it is equally important, if not more so, for the psychological. Any fact, sequence, principle or law in this realm accurately observed, indubitably verified and fairly recorded even if not explained is a decided gain to the store of human knowlege.

During the latter half of the 16th century lived and labored

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the astronomer, Tycho Brahe. His was not an intellect of the first magnitude, but he was careful and honest. His theory was wrong, he could not understand or accept the system of Copernicus, but he observed faithfully and conscientiously, and recorded his obesrvations accurately. A greater than Tycho came, and on the basis of what Tycho had done, and done well, reared his own labors, and found the eternal laws laid by the Architect mony and beauty about the sun.
of the Universe upon the orbs coursing in transcendent har-

We cannot all be Kepplers, but we can be Tycho Brahes. I have often thought that much of importance is carried unrecorded to the grave and thus lost to mankind.

That there are more things between heaven and earth than are dreamed of in our physiology is evident from the discovery of actinic radiations of as yet unknown character from the human organism. That these emanations are of various kinds seems probable. Thus recently M. Charpentier reported to the Paris Academy of Sciences that certain radiations from nerve tissue differ materially from the so-called n-rays inasmuch as they effect the phosphorescent sulphide screen when heated to 40 degrees to 45 degrees C, more strongly than the Blondlot rays proper. It is probable that we are on the threshold of important discoveries in this field, though at present the subject is still shrouded in much uncertainity even as to fundamental facts.

In psychiatry a gradual transition is taking place in studying and viewing mental disorders from a clinical rather than a symptomatic standpoint, as has been the vogue heretofore. This is in consonance with a strictly scientific spirit, and tends to place psychological medicine in line with scientific medicine generally. The old classification now passing was based on symptoms, and many entirely differing types divergent in progress and heterogeneous in nature but having some prominent symptom in common were grouped under the same heading. But the revival of more earnest study and investigation of insanity in accordance with modern methods has brought about the change which augurs something better. The school of Kraepelin is foremost and prominent in this work, and its views are gaining gradually wider acceptance. While it seems true that that some of the types are not fully defined and Kraepelin's system is not fully crystalized, nevertheless so many of his types are so fully in harmony with observed facts, that we cannot but look upon his views and teachings as of the highest importance and value. Where there is much discrepancy between his findings and our own, it may be that climatic and racial, even social factors enter into the question and are productive of the differ-

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ence. For instance the nearest approach he has to our "Acute Delirium," "Acute Delirious Mania" or "Grave Delirium" is "Collapse Delirium." This differs, however, from the trouble we know radically in prognosis. Kraepelin considers "Collapse Delirium" if properly treated in time as eminently curable. On the other hand, observers here look upon "Grave Delirium" as highly fatal even under the best treatment, and the few patients who survive the furious brain storm are usually left hopeless mental wrecks thereafter.

In Paresis and also in Locomotor Ataxia there has been a tendency of late to minimize the influence of syphilis as an etiological factor. The pendulum appears to be swinging the other way. I personally think it is receding from the truth, and the more cases of these kindred disorders I observe, the more am I convinced of the malignant potency of lues in the causation of these fell destroyers. This brings us to a curious anomly in our social hygiene. We quarantine the child having measles however mildly, and properly so, and this to the discomfort of all concerned. On the other hand we permit the bearers of both sexes of the most baneful and loathsome contagion, who nine times out of ten are the lecherous architects of their misfortune, go free and untrammeled, to scatter broadcast death and disaster to the living and those yet unborn.

Why should Venereal diseases not be quarantined with smallpox, scarlet fever and diphtheria? You may say that professional ethics would militate against giving information and the enforcement of quarantine. If this is so, it is high time to reform the code of ethics. But I think not, for I take it the code is built upon a still profounder and wider law, which is well expressed on the armorial bearings of our State Board of Health: "Salus papuli suprema est lex."

In epilepsy, of speculation and theory there is no end. Yet it is questionable whether we have made any real advance in our knowledge of this disorder. The future may shed more light on the subject, at least we are led to place hope on the labors and investigations conducted at well organized and equipped institutions for epileptics which are gradually increasing in number and consequence. In the treatment it may be said in the words of Dr. Spratling of the Craig Colony for Epileptics, that it is not "a single prescription disease." Disorder or irritation in various organs may act as the exciting fulminan to set off the epileptic explosion. These local influences must be sought and removed. Thus at the Craig Colony some benefit was derived from relieved eye strain, by correction of refractive errors.

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At the Colony, 5 percent of cases are cured, but treatment carried along many lines must be rigidly maintaned for two or more years. W. A. Turner of England places curability as high as ten percent. Cases with infrequent attacks of grand mal especially if of recent development offer the better prospects of cure. Alcoholism in the ancestry, even farther remote than in parents is a well marked etiological factor. The alcoholic usually develops epilptiform attacks in his own case, but in his offspring perhaps three or four generations removed, the explosive habit appears as true epilepsy. The localization of the cerebral centers and functions progress but slowly, although many competent and patient observers are faithfully working in this field. The motor centers even for smaller associated movements are pretty well mapped, and for sensory centers fairly so, but the higher psychical and association centers are not so well and indubitably fixed.

As an additional witness that considerable loss of brain substance may be sustained in the frontal region without impairment of intellect or observable loss of function is a case reported by Dr. Walter Keate.

It is worthy of note and a token of encouragement and promise for the future that a large number of operations on the brain in the motor region have been curative. Dr. Duret of France gives statistics of some 214 out of 344 for tumor. He lays stress on early recognition and operation, and advises a careful study of the primary sensory motor disturbances, not only in themselves but also in the order of their development, in order that the location of the growth may be most exactly fixed, and a better opportunity afforded for the surgeon's skill to relieve and cure, before grave organic changes have occurred with corresponding abolition and permanent loss of function. A convulsion or aura if unmistakably pointing to a definitely and distinctly localized focus of irritation such as a spasm, a tonic or clonic contraction of a small number of functionally associated muscles should warrant surgical interference. Valuable time should not be lost in awaiting the progressive development of the disorder in its completeness. He comments on the encouraging fact that more extensive and grave trouble may not develop for a long time.

The good work done by the neurologist and surgeon combined, in these troubles in the motor zone, leads us to hope much for the future when not only the centers, but also the connections and interrelations of sensory and psychical functions shall be better known. Vivisection will aid much in furthering this knowledge, but more valuable will be accurately recorded investigations of the pathologist.

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If there is one thing more remarkable than another in the treatment of mental and nervous disorders it is the steadily increasing prominence given to nonmedicinal agents and a commensurate relegation of drugs to the rear. Hydrotherapy, electrotherapy and massage are utilized more and more to correct exciting functional errors or to remove morbid abnormalities in organs and restore same to physiological integrity. This trend in therapeusis is a gratifying sign of advancing rationalism in medicine and a consequent decadence of empiricism. It foremost of all redounds to the advantage of the patient for whose relief we labor.

A good example of this change witnessed during the last twenty-five years is seen in treatment of insomnia. Then it was customary to give in sleeplessness such as is found in mental diseases, 20, 30, even 40 grains of chloral hydrate, and in very resistive and stubborn cases even more. The bromides were given either separately or jointly with chloral equally heroically. Afterwards paraldehyde, sulfonal, trional and its tribe appeared on the scene with its paralysant effects on cortical and spinal neurones, and derangement of various important functions and even morbid organic alterations.

Nowadays the unhappy sufferer, even if in acute delirium, with a furious brain storm raging and with extreme agitation and restlessness, is placed in a warm bath from 15 to 30 minutes, and, if cerebral hyperaemia is marked, continuous cold applied to head at the same time, with the result that the tempest lulls and the quiescent patient gradually falls into a peaceful, restoring, health giving and natural sleep, from which he wakes much refreshed and improved, without a narcotized nervous system or disordered stomach. Hypnotics and sedatives are still employed, but only in exceptional instances and where everything else fails. Equally good results are obtained in treatment of insomnia elsewhere outside of hospital practice. That the patient is immeasurably the gainer by the change is obvious.

Equally satisfactory is the use of intelligently prescribed and administered baths in maniacal conditions. Of the greatest service is massage and passive movements in depressed and impoverished conditions. The improvement in innervation, circulation and nutrition of either a part or the whole of the body under the ministration of a well informed masseur has only to be seen to be appreciated. The treatment often beneficially associated with hydrotherapeutics, is successfully employed not only in functional disorders with loss and exhaustion of the nervous system proper such as neurasthenia, but in diseases depending on lowered vitality generally.

In this connection it may be well to draw attention to the

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good results in neurasthenia and kindred disorders from actinotherapy, especially the chemically active rays in the violet and ultra violet zone of the spectrum. We have observed equally good effects from high frequency electrical currents. To observe a slow sluggish, almost reptilian circulation tone up and a cold clamy body become warm and better nourished under such electrical stimulation is certainly a pleasure and a marvel of modern therapy.

Actual medication is now chiefly of a restorative and corrective character, particularly is it sought to improve the quality and thus augment the nutrient efficiency of that great circulatting medium, the blood. Many nervous and mental disorders have mal-nutrition at least as an exciting cause, and repair by rest and nutrition of worn and exhausted nerve cells, is indispensible to inaugurate healing.

Perhaps equally important is the proper elimination of the products of wear and to restore the equalibrium of forces and principles employed in nature's laboratory so essential to integrity and health. Studies of the blood and investigations in bio-chemistry are doing much to facilitate our understanding of these disorders and to improve and rationalize our therapy.

Friedreich's disease, or family ataxia, especially in the form known as Marie's, frequently resembles certain cases of insular or multiple cerebro-spinal sclerosis. Dr. Pierce of Philadelphia has done some work to facilitate differential diagnosis in these perplexing disorders. He thinks, Friedreich's disease if anything the more frequent and often dependent on alcoholism or degeneration in the ancestry. The speech is syllabic instead of scanning as in insular sclerosis.

Infantile paralysis has come to be regarded as essentially an infectious disease, hence of microbic origin. Unfortunately the disorder is often not recognized until grave involvement and destruction of the motor cells of the anterior horns of the spinal cord has taken place. Dr. Sterne of Indianapolis cautions to seriously regard grave affection of the nervous system with gastric disturbance with suspicion of this disorder. Early treatment is of the highest importance. Counter-irritation along the spine, antiphlogistic applications, especially dry cold constantly applied to spinal column are serviceable. Perfect rest must be enforced. After paralysis has taken place electrical stimulation is useful. But nothing at this time can take the place or do the good that intelligent treatment can accomplish at an early stage. In Landry's paralysis, wherein we usually have a rapidly ascending loss of motion and death in a short time, similar views obtain. It is now held by those who have had most opportunity to investigate this fatal disorder that it is

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due to toxemia overwhelming the spinal centers and that death is due to paralysis of the diaphragm by involvement of the phrenic nerve center in the cervical region. A microorganism peculiar to the disease has not been differentiated, but it has been observed in connection with the presence of pathogenic bacteria of other diseases.

Fortunately this disorder is not common. Brief reference may properly be made to what Bramwell calls the "American disease," Neurasthenis. That this designation is not inapt is quite obvious to those who have much experience in nervous disorders, and is explainable by our strenuous life wherein the burden of the wear and tear consequent on our life of strife and stress falls upon the nervous system. Dana, on the other hand, thinks that the initial stages of other nervous diseases, such as dementia praecox, tabes, manic depressive insanity, melancholia and the like are frequently mistaken for neurasthenia. This is no doubt true, since many of these diseases are associated with or even depending on exhaustion of the nervous system. Nevertheless it is also true that neurasthenia per se, for reasons given is also becoming more frequent. Moreover for the same reason it is obvious why treatment is often so unsatisfactory in these disorders. Exhaustion anywhere above anything else requires rest for restoration, and this is what we are so often unable to procure for our patient. We cannot dislocate him from his circumstances. Restoratives, strychnia, baths, massage, electricity, valuable as they may be in conjunction with rest, are powerless to cure if the patient remains subject to the continuous grind which in the first place produced the disorder.

Here, as elsewhere, prevention is so immeasurably superior to cure, that I deem the old adage wrong in attempting to give the quantitative ratio in finite terms.

In conclusion, I deem it my duty, in as emphatic manner as I can, again to draw attention to two potent factors in the causation of mental and nervous disorders; potent beyond all others for evil to this and coming generations of the children of men, syphilis and alcoholism. I do not know to which of the two baleful influences to award the palm of malignancy. Like unto two evil spirits of hate they hover along the stream of life, even at its fountain, and pollute, blight and destroy all living and aspiring tissue even unto the third and fourth generation.

The sad and also the hopeful part in this matter is that these destroyers are acquired and this not by necessity. As teachers of men in matters salutary, it behooves us to warn and instruct our brother who has had less opportunity for information against these dangers besetting his path. Let us not be remiss in our duty.

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TIC CONVULSIF OR LA MALADIE DE GILLES DE LA TOURETTE

L. W. LITTIG, IOWA CITY, IOWA

When invited by the Chairman of this section to prepare a paper, I promptly sent him the above title, feeling sure that it would not be difficult to find many articles on Tics in the Journals, and that I could easily present something original, with all these articles to draw from. I found but one article on Tics in the journals which habitually come to my office.

That I had drifted into an unusual channel was further evidenced by the fact that several of my colleagues asked me what was meant by "Tics." I promptly explained that "tics," and especially a convulsive tic was not a spasmodic tic, nor yet a "tic douloureux," but that it was simply a peculiar movement, sometimes a blinking of the eyelids, a shrug of the shoulders, a peculiar movement of the arm, always affecting the same group of muscles in the same individual, and more or less under the control of the will; that there were psychic tics, and tics with explosive utterances, and "tiquers" with peculiar fixed ideas, or obsessions, etc., etc. I did not believe that tics was so very uncommon, that I had seen quite a number of cases, and that the study of tics was one of the most interesting and captivating in the entire domain of neurology.

But to answer the question "what is meant by tics?" An individual receives a foreign body in the eye. There is a reflex blinking or winking in consequence. If, after the offending body is removed, and the attending irritation has subsided, he continues to blink or wink, and unable to prevent the winking or blinking, but unconsciously continues the same, he has a tic, and, because of a peculiar mental condition, the individual is now a "tiquer," as the French call him.

Or, again, a man notices a peculiar crepitus in his shoulder joint, he moves the joint from time to time to determine whether the crepitus still exists. After a time, the crepitus disappears, but he now unconsciously moves the joint, and keeps up this periodic movement indefinitely, and we have another "tiquer," or, again, the French describe a peculiar form of tic occurring in individuals who strike their chests as an expression of sorrow for their misdeeds. Once in awhile, one of these persons will

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strike their chests unconsciously and with no thought of contrition. The peculiar movement is not only automatic and unconscious, but it cannot be prevented.

Why does one man with a foreign body in his eye, or another with a lame shoulder, or a penitent, become a "tiquer," and the many with like ailments or habits escape?

This brings us to the mental state of these people. Meige of Paris (Gaz. hebd. de Med. et C. 1901, page 780) classes all tiquers as degenerates, with a peculiar defect of will power, easily irritated and unable to meet prolonged effort; whatever his age, the tiquer retains some of the mental characteristics of the child.

Children are prone to acquire vicious habits, and the individual whose mind has retained infantile characteristics is apt to do the same thing, acquire vicious motor habits, a tic. This peculiar mental state explains the difficulty in effecting a cure.

Briand, same journal, says, "There is no doubt but that subjects of tics are unbalanced, both mentally and physically."

Ballet, same journal, says, "It is idle to assume that all tiquers are unbalanced, they are merely predisposed."

Now to define a tic. It is an abnormal motor or psychic manifestation depending on an abnormal mental state. Meige (Gaz. hebd. de Med. et C.) says it is an involuntary movement reproducing a functional act, as sniffling, rubbing the hands, striking the chest. It is an involuntary conscious or unconscious act, which the individual fails to control, but which he can prevent, abort, or defer. A sudden contraction of muscle due to irritation in its reflex arch, is not a tic. A tic is cortical, or arises in the motor area of the brain, and has no organic basis. A tiquer is conscious of his infirmity, but unconscious of its manifestation.

Russell, in Albutt's System of Medicine, tells of a young girl who, while walking the street, or wherever she happened to be, would, from time to time, bring the toes of the right foot against the calf of the left leg, scratching her leg with the great toe of the opposite foot, suggesting flea bites.

There used to be a young man in the state of Scott who had a most unfortunate form of tic; on the street, in the ball room, utterly regardless of those about him, he would give his scrotum a lift with his right hand. His friends of both sexes knew of his habit. Both he and the girl above referred to knew of their infirmity, but both were unconscious of the peculiar manifestations of the same, especially at the time the manifestation took place. At the beginning, the girl may have had a flea bite, or the young man may have had his trousers hitched too high, in both the particular act may in the beginning have been to secure

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relief from itching, or from pressure, but in both it became fixed, and both were "tiquers."

To define tics is not an easy matter. By Regis, a sudden and violent movement of certain parts of the body, especially the arms, having the characters of symmetry and coordination, and reproducing, as if from electric shocks, certain naturally associated movements always identical in the same individuals, sudden blowing of the nose, quick and repeated closing of the eyelids, sudden and automatic scratching, expectoration, blows on the chest as if in the act of contrition.

Tics may be divided into simple tics, convulsive tics, coordinated tics, and psychic tics. (Albutt).

The simple tics are of considerable importance, because frequently mistaken for chorea. They occur in children from the ages of seven to ten, and the more common symptom is a shrug of the shoulders, a raising and lowering of the eyebrows, sniffling, or the arms are brought forcibly against the chest. There may be other movements of the face, tongue, or extremities. Most of these children are treated for chorea, and only after the symptoms fail to be influenced by the usual remedies for chorea is the patient more closely scrutinized.

The condition may result from habit or immitation, a blinking of the eyelids may result from conjunctivitis or some disturbance of vision in the nose or adenoids.

The long duration of the disorder, the very limited group of muscles involved in a given case, the failure to yield to chorea treatment are the most important points in diagnosis. I have repeatedly seen this variety of tic.

In the second variety of tics, sometimes called Gilles de la Tourette's disease, the clinical picture is made up of four groups of symptoms.

First, convulsive movements, usually quick and sudden, but sometimes slow and deliberate, irregular, with or without resemblance to some voluntary act. There may be movements of offence, contempt, defiance, contortions of the muscles of the face, grimaces, rolling of the eyes, wrinkling of the forehead, eyes widely opened or closed, sniffling, etc. The head may be suddenly retracted or turned to one side, shrugging of the shoulders, sudden stooping, stamping, jumping, etc. These movements are not continuous, but prone to be periodical. The patient is painfully conscious of the peculiar movements, but practically powerless to prevent them. A voluntary movement or a very powerful effort of the will may enable him to prevent the tic, but the effort is so fatiguing, that it is not long continued.

These spasmodic movements may exist alone but some-

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times there is added the second characteristic of convulsive tic of this type, viz. explosive utterances. These explosive utterances sometimes take form of some swear or "cuss" word, or malodorous epithets are applied most inopportunely and repeated to the great annoyance of both victim and patient.

Third. There may be a tendency to repeat words or phrases, usually the end of a sentence which the patient hears, and which impresses him in some peculiar way, and

Fourthly, there may be fixed ideas or obsessions, leading the patient to perform purposeless and impulsive acts which he cannot prevent.

While I have seen simple tic sufficiently often, the peculiar mental condition just referred to I have seen but a few times. It is quite likely the alienists present may take exception to the diagnosis made in one case, but the same was so interesting to me that I wish to refer to some of the chief characteristics.

A woman, about sixty years of age, if, in passing a house, she chanced to get a glimpse of a picture, could not control the desire to get a better and more complete view of the same, and for this purpose would pass and repass the house many times, or even ring the door bell and request permission to examine the picture more closely.

While at Iowa City, she crossed one of the Iowa river bridges, and in doing so read the signs on the same. After returning to the residence of her father, who lived in Iowa City, she could not resist the impulse to return to the bridge to read the signs over again. She repeated her visits to the bridge until into night and too dark for her to see.

At times she was seized with an irristible desire to count objects. Once in my office, after she had overstayed her welcome, I advised her to return home. Let me stay, she pleaded, I must see your pictures, I must count your furniture and finally when conducted just outside of my office door, with my hand very quietly but firmly encircling her arm, she prevented me from shutting the door by quickly placing her foot in the way, with "let me count, I must count, I must count your eyes."

She was afraid to take a bath, lest the water used would find its way into the river, be evaporated by the sun, rise in the clouds, and poison the universe. Once she was undecided whether or not to light the fire in the kitchen stove. Her husband entering, chanced to throw an empty match box out of the window. The patient secured a little paper and wood, made a small fire out of doors, and burned the box. Then she worried about the ashes, fearful that they would poison the ground, that the smoke would poison the atmosphere. She

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covered the ashes with leaves, then uncovered them, and recovered them.

I wished to reduce her story to writing, but she would not permit it, even when assured that I wished to do so only to more carefully study and more fully grasp her case. She did not want me to have her history in writing. When assured that I would return the papers, she refused all the more vehemently, asking what she could do with them. Burning was suggested, but she still refused, asking what she should do with the ashes; and where would the smoke go to.

This patient knew perfectly all her ideas were wrong, but she could not control them. She grew angry with me, and started for her home, but regretted her departure from Iowa City before she reached the first station, it being with extreme vigilance only that the conductor prevented her from leaving the train.

This case interested me very much. Guided by several text book articles, I regarded her a sufferer from one form of tic, but am none too certain that the diagnosis is correct.

A third form of tic is the so-called coordinated tic. As examples of this type, we have the little girl who smelled and then blew on everything she took into her hands, the girl, who while walking on the street, would turn half way round as if looking for some one, the girl who scratched her left calf with her right great toe, and the young man above referred to from the State of Scott were a good example.

Lastly, we have the psychic tics. In the motor tic, we have a spasmodic movement which the patient cannot resist. In the psychic tic there is an irresistible impulse to utter a certain word, to perform a certain act, to count a certain number before a certain something can be done. (Albutt). Motor and psychic tics may occur in the same person, and both may exist for years, and be of no importance.

An individual may have an impulse to utter certain words, the same being not usual to him, or such as he wishes to use.

Children often have a habit of touching certain objects as they pass them, as a form of amusement. The noted Dr. Johnson had the habit of touching certain posts as he passed along the street, and if he missed one, would return, and be sure to touch it in passing the second time. Dr. Johnson also had a motor tic as evidenced by a description of him printed in a lay journal only a few days ago. "He also wore his hair, which was straight and stiff and separated behind, and he often had, seemingly, convulsive starts and odd gesticulations, which tended to excite at once surprise and ridicule." What can this mean, except that he suffered from a motor as well as psychic tic.

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There is reported another case, that of a doctor who feared to touch certain things or places, as the joints between the flag stones of the walk.

Then there was the little girl who tapped on the bed a certain number of times before getting into it; also the woman who tapped on the door a certain number of times before opening the same.

By some the so-called insanity of doubt is also classed among the tics. An individual doubts whether he has done a certain thing properly. I knew a young farmer lad who illustrated this form of tic quite nicely. It was his duty to make a visit to the barn just before returning at night to see that all was well with the stock. He carefully locked the door on leaving the barn, but when half way to the house would return to see whether he had or had not locked that barn door. He made as many as six or eight of such returns in one evening, until he realized that the habit was growing on him, and he knew that his doubts were a nuisance, especially on a cold and stormy night. It required all his strength to break the habit. He would lock the door, give it a hard shaking to satisfy himself that it was locked and then start for the house. It was a struggle, and he was forced to argue that he had not only locked the door but that he had shaken it to satisfy himself that it was locked. After a fortnight of effort, all doubts vanished, and it was perfectly easy for him to reach the house after leaving the barn.

In closing, I wish to repeat that I have but an unsatisfactory conception of the tics, although I have seen quite a number of cases which I diagnosed as tics, and others which I now regard as tics which I did not recognize at the time. The French regard tics, motor or psychic, as exceedingly common. I remember the statement tout le monde a son tic, everybody has his tic.

I wished to bring up a subject which is but little understood, and which I consider of interest from many standpoints.

Discussion on the Paper of Dr. Littig

C. F. Wahrer.—I must confess that the paper is unique and on a subject I know but little, except as it relates to chorea. The writer mentioned many cases, classed under this peculiar title, which might be treated as chorea. In my experience, a young boy about eight years of age began to have manifestations of this kind. He was of good parentage, except upon his mother's side there was a little streak of hysteria and other neurotic disturbances. They were not particularly noticeable

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or emphatic. At the age of eight years he began by shrugging his shoulders while studying, or something of that kind. He was a student even at that age. After a while he would make occasional facial grimaces. Later on the shrugging of the shoulders became less frequent and the grimaces became less frequent and these movements were transferred to another part of the body. While at school he would sometimes say, "Ha, ha," and sometimes he would give a most ear piercing whistle. The teacher would say to him, "You must stop whistling or be chastised." He was a boy who had high ideas of right and wrong and did not wish to be chastised, and while somewhat effeminate, would resent, as unjust, the criticism made on this habit. He told the teacher one day, "I did not whistle" and when the teacher persisted in it, called the teacher a liar. I found out what was the matter and told the teacher it was entirely unintentional on his part. Finally the whistling and the peculiar noise passed away. Then came another habit, ask him a question and he would look up and before answering, he would lock his fingers and then would answer. This kept on from one thing to another and perhaps an occasional return to the former habits without any particular disturbance in the boy's life or affecting his mental strength and he was a boy of unusual mental ability. He is now 25 years of age, a very broad minded, billiant young doctor. This was his history up he is possessed of any of these habits at the present time. I think not. I want to know whether the doctor calls it a case to the time he was eighteen years of age. I do not know if he of chorea or a case of tics?

L. W. LITTIG, IOWA CITY.—I would like to have Dr. Witte's opinion on the subject.

MAX WITTE, CLARINDA.—I should not class it as a case of chorea. I think it is simply a habit. It is a tic like habit.

L. W. LITTIG.—As I stated in conclusion, I know but little of tics myself. S. Wier Mitchell says there is a relation between tic and chorea. He calls a tic a "habit chorea," but the best authorities that we have, (the French), on this subject, insist there is absolutely no relationship between a tic and a chorea. In fact they say that between the chorea and the tic there is a wide chasm which cannot be bridged. In the doctor's case it was not a case of chorea. The result of his treatment and the long relation to the case would suggest that it was not chorea. The reason why I wished to have Dr. Witte's opinion was this, why the manifestation changed from one thing to another, first the jerking of the shoulders; that is characteristic of tic. If the doctor had described that only there was no question about

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its being tic. The whistling itself is another manifestation of tic and the peculiar sound made. The strange thing about it is the recovery of the lad. Many of them get well, of course but many of them do not. It lasts for a long time. Statements in this regard differ very much. Some authors tell you that tics get well and some tell you they are incurable.

With regard to mental condition I do not know whether they would be conclusive with tics or not. The individual does a certain thing and then doubts that he did it. I do not know whether that is tic.

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THE RELATIONS OF INSANITY TO SUICIDE

GERSHOM H. HILL, M. D.

The increase of insanity is one of the living questions for study in modern civilization. The statistics of countries where a reliable system of registration exists, show that mental derangement is more and more prevalent. In states and in countries where ample provision has been made for insane persons, it is now customary, when an effort is made to determine the number of insane, to take into account only the persons who have been declared to be insane in a legal manner, and who have been placed in institutions for treatment. There are so many, and such a various lot of, people in society who are of doubtful mental capacity, or markedly peculiar; who are hyponchondriacal, or despondent, or hysterical, or epileptic, or inebriate, or criminal, or who exhibit well marked symptoms of degeneration of some other kind, that it is a hopeless task to undertake to determine who are insane, and who are not insane. It is evident that there must be some good authority (persons who are compeent on this subject) to decide a question of this kind. The more generally and thoroughly people are educated, and the more complex society becomes, the more persons there are in every community, living in the border land, between the typical and undoubted sane people on the one hand, and the thoroughly crazy people on the other hand. In Great Britain in 1860 one person in every 523 of the population was insane. In 1890 the ratio had risen to one in every 320. The ratio in the state of New York at the present time is one to 340, and in the state of Illinois it is about one in 400. In the state of Iowa in 1880 it was one insane person to every 633 of the population. Estimating the whole population of this state to be two and one-half million, and the insane population in the four state hospitals, and in the four private hospitals, and in the fifty-two county asylums, to amount to 5,000 inmates, the ratio is now in Iowa one in 500.

Statistics teach us that the suicidal tendency has not only increased rapidly during the past century, but this increase is an undoubted fact at the present time; not only in Europe but also in the United States. We are inclined to believe that other evil

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tendencies are also on the increase, such as homicide, alcoholism, licentiousness, divorce, and crime, but insanity increased in frequency during the half century faster than suicide. It is probable (in a state like Iowa, which is agricultural in character rather than manufacturing or commercial, and where the proportion of foreign born population is now comparatively small), that there will be no farther increase in the proportion of the insane to the sane. So far as I am able to predict no condition is likely to develop in Iowa which will increase the proportion of the insane, except a still more abundant provision for demented persons, both old and young, in the state hospitals. But I fear that the increase in suicide has not reached its limit. The steady growth of insanity and of suicide corresponds with the progress made from a lower to a higher degree of civilization. This tendency is such, and so marked, that it proves true in all countries in spite of differences of climate, race, religion, and the number of inhabitants. Of late I have given special attention to the study of suicide, and have for several months read all accounts in the local daily papers concerning self-destruction. Many of the articles have been cut out and classified and filed, in order to illustrate the different causes of suicide, the different circumstances, under which the act was committed, and in order to determine the mental condition of the perpetrator. I have been impressed with the feeling that suicide is a very frequent occurrence, and that in many instances the causes of it are trivial. But it is to be remembered that daily papers in this country and in this state are excessively numerous, and that the reporters who hustle day and night in order to procure sufficient copy for their columns, succeed in calling the attention of the public to every case of suicide, as well as to all cases of accidental death, and of homicide which are anywhere committed. Newspapers must print the news. Sudden, and unexpected, and unnatural modes of death are sensational and gratify the curiosity. Prominent headlines, and graphic descriptions of self-murder are undoubtedly important causes of suicide. The overwrought nervous system, the strenuous life, the inordinate ambition, the failure to achieve what is desired, and the consciousness of guilt, which must be disclosed to the world, seem to be permanent causes of suicide.

The best way to determine whether suicide is increasing, and whether it is more frequent in one place than in another, is by comparing statistics. During the last century suicide increased in New York city from a rate per 1,000,000 of population of 14 at the beginning of the century to 21 at the end of the century. But during the last ten years there has been no increase in suicide in the largest cities of the United States. In

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Chicago there has been no increase during the last 10 years, the rate being 23. In Des Moines for the year 1902 it was 16. It is difficult to compare the suicidal rate of one state with another on account of imperfect vital statistics. Nevertheless the number of suicides in the United States is approximated and there occur annually three and one-half suicides to every 100,000 inhabitants. By comparison with other countries it will be observed that suicide is much less frequent in America than in Germany and in most other European countries. It is one-half as frequent here as in England. The figures are as follows: In Saxony there are 31, in Denmark 25, Austria 21, France 15, Germany 14, Norway and Sweden 8, England and Wales 7, Italy 4, Russia 3, Ireland 2, Spain 1 to 100,000 inhabitants. The average for 50 cities during the last decade of the last century was 16, so that the number of deaths from suicide in this city is about the average for the cities of this country. But the number should be less in Des Moines than the average for the cities with which it is compared because the population is much less than the average and because suicide is more prevalent in large cities than in small ones, and in urban life than in rural districts.

Heredity is a cause of suicide as well as insanity, but it is not nearly so well marked nor so potent in suicide. Married people are not so likely to commit suicide as the single and as the widowed. Single men are much more likely to become insane than single women. On the other hand married women are more likely to become insane than married men. The contrary is true concerning the influences of conjugal conditions in producing suicide. The use of alcohol as a beverage produces both insanity and suicide to a considerable extent. Disappointed affection and domestic trouble are much more likely to produce suicide than insanity. The same is true of grief and poverty. Old age results not infrequently in permanent dementia, and old age especially if it is accompanied by loneliness may be the cause of suicide.

In efforts which have been made, at various times in various countries and by different persons, to determine the mental condition of persons who commit suicide, the general conclusion has been reached that in about one-third of the cases of self-destruction the perpetrator is certainly insane. In considering this phase of the subject of suicide, it is important and interesting to consider the various kinds of mental morbidness which are not insanity.

The habitual use of alcohol impairs the mind and health. It may produce absolute and permanent insanity. Men and women get into trouble of various kinds, while they are intoxi-

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cated. Sometimes they kill other people and sometimes they kill themselves. Sometimes the same persons while under the influence of liquor will first kill another man, or a woman, then himself. Persons under the influence of liquor may, or they may not, realize what they are doing. The law holds all such persons responsible for getting drunk, although acts committed while under the influence of liquor may be unintentional and they may be committed because the man has lost control of himself.

Many suicides are committed in an impulsive manner. Life is ended quickly in anger, or in grief, or in fright, or on account of great disappointment. Women, and sometimes men, may kill themselves while in a hysterical condition.

I do not believe in impulsive insanity, that a man can suddenly and unexpectedly, in an hour or in a day, pass from a sound into an unsound mental condition. There must be a change in the brain as well as in the mind, if such a change in this organ occurs instantly the disease is not insanity. Toxic conditions of the brain, and mental phenomena incident thereto are not insanity. Then who are insane, when they commit suicide? First, cases of melancholia. Not all the persons suffering from melancholia are inclined to end their lives, yet this general form of mental derangement is the kind of insanity in which suicide is most likely to occur. Second, cases of senile dementia, often develop a morbid propensity to hang, or to drown, or to starve themselves. Old people may on account of the loss of their faculties, end their lives by carelessness, or in some other accidental manner. Third, cases of dementia praecox sometimes commit suicide. More than one-third of all the patients admitted into the hospital at Independence are said to be suffering from this form of insanity. It was formerly known as primary dementia. It occurs in young people. After assuming the cares and responsibilities of adult life, the faculties give way and from the outset, weakness of mind is the most permanent symptom of unsoundness. These demented persons like senile cases, may end their lives in a morbid or accidental manner. In round numbers, I estimate, that one-third of the cases of self destruction occur in persons certainly insane. Another third of the cases of suicide, include persons who are debilitated physically and perhaps mentally by overwork. Or who are out of condition for want of sleep. Or who are worn out by pain. Or who are in an impaired mental condition on account of some bodily disease. Or who are out of condition physically on account of long continued worry. Or compunctions of conscience, or on account of domestic infelicity, or on account of pecuniary embarrassment.

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Suicide is committed by business men who are in a condition of nervous debility. They cannot perform their accustomed duties satisfactorily. In some cases such a man fears that he is going to lose his mind entirely, thinks he is good for nothing, that he is becoming a non-entity, that he is likely to be a burden to self, to friends, or to the state for the rest of his life. So he prevents such an experience, and such a winding up of his individual career by self-destruction. Aged men and women, who are not insane, nor more infirm than the average, sometimes hang themselves, or otherwise cut short life, simply because it is monotonous, or lonesome, or useless.

Education, modern modes of living, and of doing business, make people ambitious, and proud, and independent. The American citizen is active and self-reliant; he undertakes to care for himself so long as he lives and thereafter to provide for his family by life insurance. According to the law of "the survival of the fittest," when he is good for nothing, he should get out of the way. The cases above described, and many others who commit suicide are not insane. What constitutes insanity? Simply losing the instinctive desire to live, and the purpose to do so long as possible, is not insanity, because these feelings although active and potent in childhood, and in the prime of life, are gradually relinquished with age. Getting tired of life because one is not in good health, or because he can procure for himself and for those who are dependent upon him only the bear necessities of life, is not insanity. Insanity is a disease of the brain, affecting the integrity of the mind. It is a prolonged departure from one's usual mode of thinking, feeling and acting. It is characterized by delusions, hallucinations, or a well marked and persistent change in character.

I conclude that one-third of the persons who commit suicide are sound in mind, and commit murder. The act is premediated, it is deliberate. The manner of its performance shows good mental capacity, equipoise, and perfect self-control. The man who, for any reason, does not succeed in supporting his family, and who cannot discover how he will be able to make proper provision in the future for persons who are dependent upon him, gets his life insured, knowing that as soon as his days are ended his dear ones will be paid the sums of money named in the insurance policies. One of the twelve disciples selected by Jesus Christ as the treasurer of the Theological Seminary, which he founded while on earth, and in which he was the teacher for three years, is said to have been at heart "a thief." The money which was paid out by Mary for expensive ointment, to pour upon the feet of her beloved Master, Judas Iscariot said should have been saved and placed in his

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purse. For 30 pieces of silver he was willing to turn traitor. He led the enemy into the Garden of Gethsemane, and that no mistake might be made by the soldiers, he identified his Lord and Master by kissing him. After he had done this dastardly trick, and reflected upon his own conduct, and realized more fully than ever before the innocence and the loveliness of his victim; after he attempted to expiate his crime by returning the price of blood to the persons who had paid it to him, he discovered that the world had no use for such creatures, that he deserved punishment so killed himself.

He was not insane. Natural selfishness, cultivated and indulged, in spite of good opportunities for right living and for developing the altruistic spirit, got full possession of this man ruined his reputation and caused his death. The banker, or an office holder of some other kind, who betrays his trust, who appropriates money placed in his care, and who convinces himself as well as his associates and the world, that he is unfit for the position which he occupies, may decide that the easiest way to get out of the predicament which he is in is to leave this world immediately. He is not insane. A man who is taught to practice the golden rule in business and in all the relations of life, who believes that the most valuable part of his being is immortal, that life is a precious gift, which should not be trifled with nor recklessly disposed of, is taught that patience, fortitude and devotion to the welfare of others are noble qualities and when properly developed produce the highest type of character, is not likely to kill himself, no matter how much pain he is called upon to suffer, no matter how much privation he is obliged to endure, and no matter if his physical and his mental powers are impaired. Persons who rightly understand and practice the principles of the Christian religion are least likely to commit suicide.

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THE EMOTIONS

LENA A. BEACH, CHEROKEE, IOWA.

There is probably no condition which has as much to do with the conduct of our daily life as the subject we are about to consider.

Our normal state of feeling is but the succession of pleasures, troubles, desires, etc., which in their temperate form constitute the ordinary round of life. Yet this is a branch which has received the least of scientific study. The most knowledge we have is gleaned from literature more or less founded upon sensational ideas.

We all have our own vague ideas in regard to emotion, but when it comes to search for the how, the why, and the wherefore of these conditions, we have entered a field where the soil has received very little tilling.

Those who have directed their attention almost exclusively to the physical ailments are inclined to look upon the emotions as of a physical nature, while those who study the mental principally can scarcely conceive of its being purely of this character.

Accordingly, we have developed the physiological and the intellectual theories. The former, i. e., the physiological advocates the emotions as being the direct and immediate expression of the vegetable life while the latter, the intellectual, maintains that every emotion results from the co-existence in the mind of ideas, which agree or disagree, it is the immediate consciousness of the momentary elevation or depression of psychic activity. Thus has man ever been viewed from a dual aspect. Suppress all intellectual ideas, and all feeling is gone. Remove all physical activities and no emotion exists.

We know that certain physiological conditions are always present. How quickly joy brings a brightness to the eye, increased heart's action, or fear, the anxious expression, increased heart's action and trembling. Is this the emotion or only the expression of a process which is not so plainly visible to the eye?

Let us imagine, for a moment, if we can, an individual devoid of all emotion. Can you do so, and still think him as a living being fit to associate with his fellow-beings and bear his

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share of the burdens of life? No, you cannot, for such a person could not feel the joy and sorrow of the world.

It is only when we have a disturbed condition, either a decrease or an excess that we are brought to know their powerful influence.

Here is the point where we, as physicians, become interested for the disturbance of the emotions is often the first manifestation of a diseased condition. This is especially noticeable in insanity. So often the relatives will say, "He did not seem to be interested in things which he formerly enjoyed," or "He became angry at the slightest provocation," etc. How often we are told this particularly in cases of Dementia Praecox, Hebephrenic form, where emotional dullness and indifference is frequently the most striking symptom. Later their delusions are expressed without any apparent emotion. They show no sorrow over the death of a friend or relative, or joy at the arrival of one who has in former times been very dear to them.

In an increase of emotional excitability, we have frequent changes of mood. This is very noticeable in cases of excitement in mania, where we observe the emotional tone change with every fleeting thought as it leaps from one subject to another.

Emotional states are very active in the origin of delusions. Delusions thus incited change with the mood of the patient and when the individual is in a state of emotional equilibrium seem to disappear entirely to return again perhaps when the emotions are aroused.

All extreme emotions are accompanied by clouding of consciousness. Watch the angry man as he pours forth his torrents of angry words, mingled perchance with blows and you cannot doubt but what there is a clouding of consciousness, and then listen to his confession afterward when he says, "I was so angry I did not know what I was doing or saying."

Likewise in cases of agitated melancholia, where fear is the predominating emotion, the patient exclaims, "My sins are so great, my sins are so great. I am lost. I am lost," and if your hand is upon the pulse or chest at this time you will notice the increased heart's action and muscular trembling, the face is one of intense anxiety, and it is as a rule, useless to attempt to attract the attention for the individual seems to be oblivious to all else except his one absorbing thought.

Environment here, as in most things, plays its part. I call to mind two cases of Hysterical Insanity: Mrs. A—who was desirous of going to a hospital to get "rested up" as she expressed it. During her stay of several weeks she manifested fair emotional control. She returned home but after a few

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months was again sent back to the hospital, and again manifested her congenial disposition, and fairly good self-control. Her husband makes the following statements in regard to her conduct while at home: "In a few days her spells began coming on again, and she was lots worse than she was the first time, and still she seemed to know what she had done, and would control herself when strangers were around or was away from home, that part seemed to be very strange. She drove her help away by her mad spells, and they would come on any time, day or night. She would get so mad, pound things to pieces, tear her clothes off herself, burn them up, knock the children down, pound them with anything she got hold of, and if I said a word she would fly on me and fight like a mad person in a fit of madness."

Mrs. B—whose case takes a little milder form, has for years had "fainting spells" her husband tells us these occurred when she was angry; she says when she was worried. She would fall to the floor in a stage of seeming unconsciousness and remain in a stupor for hours, sometimes. She is very careful in describing them to distinguish from epilpetic seizures. She has no scars showing any wounds received during a fall. She spent eight weeks visiting her parents, during the past year, and did not have a spell, was the inmate of a hospital for several weeks, and was not thusly afflicted, while at home she would have several during a month. Her explanation is that it is the work and worry at home which affects her in this manner.

These are both examples of those emotional individuals who are greatly influenced by their environments, and easily drift from one state to another. When joy permeates the atmosphere, they are in this condition, but let anger enter and they swing as rapidly to the opposite pole.

We are all more or less familiar with characters which under religious emotions have accomplished such marvelous feats. The individual who fasts for days because he believes it to be his religious duty, says he does not feel hunger. Why? Because he believes he is doing right, it is through fear, remorse, love of God, or his fellow-men, that his act is prompted, and the sense of hunger is really absent. Even those who are classed as normal, will tell you that they can notice how sorrow decreases their desire for food for a short time. If this be true, for a temporary condition, it is not strange that such is the situation in one whose whole thought is centered on this subject.

Thirst is similarly affected. The individual who has once acquired the appetite for drink, thinks he cannot get along

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without it, but after he is placed in a position so that he cannot obtain it he says he does not care for it. This is because he knows he cannot procure it. His former environments which have been so active in arousing this state are changed, and he diverts his thought into other channels; and thus, the desire is lost. This is brought forcibly to the notice of those who have had the inebriates under their observation. Those who have been constant users of alcoholic stimulants for years, when placed in an institution and at once deprived of all stimulants, as a rule, experience little physical discomfort, and in a short time, under these conditions, the desire is no longer active.

This is equally true of the Morphine user. I remember one case which was using 40 to 50 gr. of Morphine, and 25 to 30 grs. of Cocaine per day when brought to the hospital. The cocaine was withdrawn at once, and the morphine reduced to 2 1-2 gr. twice the first day, and was reduced to 1-2 gr. each day until she was receiving no morphine, but was still given hypodermics of heart stimulants for nearly two weeks. At the end of this time she could scarcely be made to believe that she had not received the drug for so long a time because she thought she had felt its effects after each dose and would as a rule be much quieter for a time.

Thus, as a summary, we see that all the organs, both voluntary and involuntary, are affected by the emotions, the mental condition deranged, hence, we can see how the general health may be undermined by their existence and how important that we recognize them early and by improving the general health, the psychic influences, producing rest, or change of environment, remove the cause which is producing a state that may lead to invalidism either mentally, physically, or both.

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A REPORT OF A CASE OF CEREBRAL ABSCESS

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The object of presenting before this society this report, is not to adduce anything new in the symptomatology, diagnosis, or treatment, but rather to present some interesting and unusual points in the course of the disease.

The personal history of the patient shows that at some time during childhood, she had scarlet fever and following this has had otitis, with remission and exacerbations and at 13 years of age convulsions.

Irritable disposition, mental dullness producing imbecility with poor memory and inattention. For years she has complained of intense headache, at times limited to right side, and again being general. Pain on pressure over tempero occipital region and the mastoid process.

The clinical history includes nearly all the symptoms usually found in cerebral abscess, and in addition, toward the terminal stage, the symptoms of sinus thrombosis, viz: Stasis of veins of scalp, swelling and tenderness along the jugular vein, rapid pulse. Amblyopia.

Under the general symptoms are included: (1) Subnormal temperature as a rule, at no time very high; (2) Pulse slow, at times and usually out of proportion to temperature; (3) Prostration and stupor, and appearance of general illness not proportionate to other symptoms; (4) Chills; (5) Nausea, vertigo, vomiting and constipation; (6) Delirium; (7) Severe and almost continuous headache; (8) Convulsions; (9) Paralysis was not present; (10) Vasomotor flushings of skin on face, chest, arms and legs.

The mode of death is interesting because of the suddenness without previous alarming symptoms for several days and was probably due to embolism of the heart or lungs either from the lateral sinus thrombus or from the formation of gas producing an air embolus.

Post Mortem.—The subcutaneous tissue over the scalp, face, neck and upper chest and arms, especially marked over

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the course of the veins is filled with gas and extravasated blood. On section of the blood vessels gas escapes. Purging of blood from the mouth and nose.

Calvarium.—Tables are thin with a moderate amount of diploe which shows the same condition of gas formation. The dura is easily detached and over the right tempero-sphenoidal lobe is an area 2 inches in diameter, infiltrated with pus and adherent to the leptomeninges. The dura and leptomeninges are intensely congested.

The ophthalmic, caroted and basilar arteries emit gas and dark fluid blood. The basal ganglia and convolutions near the abscess are friable probably due to the action of the bacteria. No adhesions of dura to leptomeninges except at site of abscess.

The right lateral sinus contains an infected thrombus about 2 inches in length, not completely occluding the lumen of the sinus. This thrombus is of a dark red color streaked with gray indicating pus. Cultures from this pus were negative.

The conclusions to be drawn from the conditions found postmortem are, (1) That the abscess was one of long standing evidenced by the thick capsule; (2) That the sinus thrombosis was the direct cause of death, was secondary to the abscess formation and may have developed either from the middle ear or from the abscess; (3) That the active germ was one of gas forming group, probably the bacillus aerogenes capsulatis of Welch; (4) That such a condition is a constant menace to life and as such should be dealt with surgically as early as a diagnosis is made, by trephining exploration and evacuation.

Prophylactic measures should be instituted at the time the child has any of the predisposing causes, be it measles, scarletina or any inflammatory condition of the buccal or nasal cavities, by a proper toilet of these parts and if otitis and mastoiditis supervene early and radical treatment of this condition.

Discussion on the Paper of Dr. Benson

C. E. Ruth, Keokuk.—These cases are always interesting, indeed, and especially from the fact that they are seldom dealt with early enough to give satisfactory results. I have had some painful experiences, which I will keep in my mind as long as I live. One case I was called to see in Illinois about four years ago. The doctor gave a history of a case of chronic suppuration of five years standing. He also stated that there had been a cessation of a discharge from the auditory canal that commenced about ten days previous to the day I saw the patient. He had seen her daily for several days and had noticed on the

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day he called me symptoms of cerebral abscess and I was called for the purpose of trephining. When I examined her I found a practically normal temperature and pulse. I declined to operate because of a lack of corroborative symptoms of the presence of cerebral abscess. Her intellectual faculties were unimpaired, there was no disturbance of the motor area, there was no disturbance of the reaction of the pupils of the eye to light. Forty-eight hours afterwards I was called again to see the patient. I was called sooner but I did not reach there until forty-eight hours after the time I saw her first. She was then profoundly unconscious and had been for fourteen hours. She had been having convulsive contractions of the muscles on the left side of the face. She needed but very little anasthetic and I opened above and behind the auditory canal and found the dura bulging and pulseless. I used a groove and penetrated into the interior of the brain and evacuated three ounces of pus at a depth of about a half an inch. A drainage tube three inches long was introduced and the patient was conscious the next day and on the whole we supposed making quite satisfactory progress for sixteen or seventeen days as I remember it now, when suddenly there was a repetition of the former symptoms identical to what had been before and there had existed for several days a pronounced cerebral hernia. When I saw her this second day in this profound state of unconsciousness and insensibility it had lasted sixteen hours. I cleared out the entire mastoid and because the hernia was so pronounced I hesitated much to increase the opening through the dura, that was about an inch or an inch and a half in length. I then started to make exploration for the purpose of detecting, if possible, the presence of a secondary abscess and succeeded in evacuating, as formerly, very little pus in the mastoid, the secondary abscess after the first and a little anterior to it, that discharged immediately not less than two and a half or three ounces. The patient made a slow but satisfactory recovery, which was, however, complete. About three months after this I removed a sequestrum from the auditory canal, involving the temporal bone. It was half an inch in length. There were two pieces. The larger of the pieces was a little over half an inch in one direction and one-third of an inch in the other. This was removed without the anasthetic but with considerable pain to the auditory canal and the wound closed entirely, that is the operative wound above and behind the ear. She has remained since in perfect health. She says so far as she is herself concerned she thinks her memory is as good as before but the physician and the sisters and the brothers, all of the relatives of the family closely related

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to her and intimately associated with her, say that they note no impairment of her faculties whatsoever and yet there was an enormous amount of cerebral tissue broken down from this large abscess and the discharge of the debris at the time of the operation and subsequent to it in the healing process and in the loss of tissue from the hernia. This is the only case I have succeeded in saving.

In one case we failed to get the consent of the parties authorized to speak to permit the operation for the relief of the condition we are discussing and there was one other case I lost because I postponed operative procedure. I regret very much not having done an operation on the patient. We postponed it a few days on account of the precarious condition of the patient. The abscesses finally ruptured into the vertricles and the patient suddenly died. We wanted to get an improved condition. He was taking nourishment and the doctor thought he was improving in strength and thought he would gain a little time. It was a grave mistake, but we are all likely to make mistakes.

E. H. King, Muscatine.—Brain abscess is frequently the result of infection from some infectious disease, such as measles and scarlet fever, and finds its entrance into the brain through the medium of the ear. I had a girl of good family and history about ten years of age who had measles. After recovery in the ordinary course of the disease she complained of intense headache and became mentally dull, would sit as though she were brooding over some problem. When asked a question she would answer intelligently but look around as though collecting her thoughts. Her mentality was slow in materializing. Occasionally she would throw her hands to her head and scream out in intense pain. Two practitioners had seen her previous to my being called and one had made an incision over the mastoid. There was a profuse discharge from the ear. I trephined the mastoid and found it soft and full of pus. I curetted it out in the direction of the petrous portion of the temporal bone until I thought I was going to take out the entire internal ear. I curetted out all of the soft tissue that seemed to be diseased, put in the drainage and kept up the drainage and she made a complete recovery. The very next day after the operation I was called in a neighborhood town to attend a similar case, a boy some 14 years of age, who had had measles three weeks previous to that time. I performed the same operation, curetted it deeply. It did not relieve the symptoms. The next day I trephined about the ear and explored deeply. I failed to reach it and he died the next day. There were two

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cases occurring about the same time from the same cause—infection undoubtedly. In one case it was confined to the mastoid, had not materalized in a brain abscess, but she was suffering from infection and gave those symptoms, while in the other I failed to reach it and the patient died.

H. W. Benson, Glenwood.—All I had hoped to do was to report this case and bring out some little discussion and it is evident that quite a number here are interested in brain abscess.

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CEREBRAL PALSIES OF CHILDHOOD

ANTON R. SCHIER, M. D., FIRST ASSISTANT PHYSICIAN, IOWA INSTITUTION FOR FEEBLE MINDED CHILDREN, GLENWOOD, IOWA.

That paralysis of cerebral origin in the early years of life occur with almost the same frequency as spinal paralysis, known as acute anterior poliomyelitis is, the writer believes, generally appreciated. For various reasons, however, these cerebral palsies have attracted less attention from the general practitioner than those of spinal origin. Principal among these is the longer duration of the former and the presence of psychical symptoms which sooner or later brings them to the specialist and a large percentage to institutions for the feeble minded. It is needless to say that any disease causing such physical and in many cases mental helplessness, should be familiar to the general practitioner. Under the term infantile spinal paralysis, we include but a single form of disease, whereas the cerebral palsies are of several different forms and are more varied in pathology and symptomatology. Accompanying the latter also we frequently have convulsions, which may often be considered as purely epileptic.

Although some investigation had been made into the cerebral palsies of childhood previous to 1880, it was not until after that period that much was done towards systematizing and making more complete our knowledge of these conditions. Among the earlier workers on the subject may be mentioned Little, who in 1850 called attention to the relation of spastic paralysis and rigidities to abnormal parturitions, difficult labors and premature births. The results of the studies of Cotard on the partial atrophy of the brain, which were published in 1868, did much to advance the knowledge of the subject. Following his work Henshl's study of brain defects and Knudrat's writings on porencephaly materially added to the proper understanding of these conditions.

Although the theory advanced by Strumpell in 1884 of an analogy between cerebral and spinal palsies was not satisfactorily established, it did much to stimulate research work into

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the true pathology of these disorders. Among other important contributors to the subject were Marie, McNutt, Knapp, Ross, Osler, Rosenthal, Frend, Sachs and Peterson.

We owe much to Sachs for our present knowledge of the condition, he having through his labors on the subject done much to bring order out of chaos and gave us the classification which is now generally followed. According to him cerebral palsies are divided as regards the period of development into three groups: 1st, prenatal, those occurring before the birth of the child; 2nd, natal, those due to birth accidents, protracted and precipitate labors, misuse of forceps; 3rd, postnatal, those dependent upon disease or trauma after birth, but usually occurring within the first decade of the child's life. Clinically they may also be considered under the head of hemiplegias, diplegias, paraplegias and monoplegias.

As regards the distribution of the paralysis, the right and left hemiplegias occur with about the same frequency. Hemiplegia is the usual form in the postnatal cases. Diplegias and paraplegias are relatively more frequent in children than in adults. According to Sachs, diplegias constitute about fifteen percent of all cases and paraplegias about fourteen percent. The latter form being found most frequently in prenatal cases, while the bilateral paralyses are usually natal cases, being due to some birth trauma. The relatively greater frequency of diplegias is accounted for by the fact that both hemispheres are exposed to the same external injuries at birth. Monoplegias are extremely rare. Boys and girls are about equally afflicted.

The onset differs, depending upon the variety of palsy. In the first group, those of intra-uterine development, the onset is obscure, the child not necessarily showing any symptoms at birth, and several months may elapse before it becomes evident that there is some defect. Cases have been reported, however, where babies have been born with paralyses, and some with contractures of the limbs. It may be safely said that all cases which appear within the first few months after birth belong to the prenatal group, providing the labor was a normal one.

In the second group, natal palsies, the history shows that the labor was not a normal one, either premature, prolonged, or that instruments were used.

In the postnatal case, the patient may show nothing out of the ordinary up to the onset of the paralytic conditions. The majority of cases occur in the first three years of life. They may, however, occur as late as the fourteenth and fifteenth year. Often they may follow one of acute infectious diseases of childhood.

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It is extremely difficult to obtain the clinical history, especially the earlier history, of these cases, as it may be overlooked, or if the symptoms are marked, may be believed to be an entirely different condition. The disease may come on during a period of perfect health, or may follow some acute disease, particularly the exanthemata. In some cases the first symptoms noticed are fever, vomiting, diarrhoea, followed by delirium and stupor. Convulsions mark the beginning of other cases. On recovering from this stage, it will be found that the child is paralyzed, there remaining one of the forms of paralysis mentioned above. The face is at times paralyzed, but seldom remains so. The leg and foot, as a rule, recover their usefulness more rapidly than the arm. Aphasia may affect those children who have learned to talk, occurring with equal frequency in cases of right and left hemiplegia.

The reflexes on the paralyzed side are exaggerated. Sensation remains unimpaired. There develops after some time rigidity and contractures of the paralyzed muscles. In diplegiacs associated movements are observed. The growth of the part is arrested. The electrical excitability remains unchanged.

Athetoid and choreic movements of the paralyzed extremities frequently occur. Convulsions affecting perhaps at first only the paralyzed side and of the Jacksonian type is the most important symptom of motor disturbance. Quite frequently, however, the convulsions are bilateral, resembling epilepsy pure and simple. According to Peterson 45 percent of the cases are affected by convulsions. Various stigmata of degeneracy may be present, such as abnormalities of the palate, teeth, hair and ears. The cranium shows defects and asymetries, microcephalus, macrocephalus, etc. In a large percentage of cases, there is defective intelligence, which may range from a slight blunting of the faculties, to idiocy.

The pathological changes found in cerebral palsies are many and varied. In those of intra-uterine origin, gross cerebral defects due in a certain number of cases, to circulatory disorders, occur, hydrocephalus, porencephaly. In others, microscopical changes alone can be found, chief among which is an agenesis of the cortex. Hemorrhage of intra-uterine origin has conclusively been shown to take place. Among the changes found in the later cases are cerebral cysts, sclerosis, atrophy and focal softening, being in many cases the result of a meningeal hemorrhage. In the postnatal palsies, hemorrhages, emboli and thromboses are considered the chief causes, with their resulting pathological changes.

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In ascribing an etiological factor in many cases of prenatal cerebral palsies, we are compelled to do some speculating. Hereditary taints are credited as such a factor in some cases, and justly so. The histories of many of these children show a decided neurotic taint. Illness and injury of the mother during pregnancy are causative factors.

Among the causes producing birth palsies are violent compressions of the fetal head, due to protracted and precipitate labors. Misuse of forceps certainly is productive of a number of these cases, although it can also be said that the proper application of forceps is preventive.

The acute infectious diseases may be classed first among the causes of the postnatal group of palsies. To traumatic injuries of the skull may be ascribed some of the cases.

Palsies of a cerebral origin may be confounded with those due to a spinal lesion. However, the increase of reflexes, absence of atrophy, the normal electrical reaction, should serve to make the distinction. In the later cases, the contractures and spastic rigidities make the diagnosis clear. The occurrence of convulsions makes certain the form of paralysis we have to deal with.

Many of these children find their way to institutions, and especially those in which the paralysis has existed for some time after which, aside from mental training and general care, little remains to be done. Undoubtedly some children could be spared this affliction by proper preventive measures. Under this head might be mentioned the proper use of the obstetrical forceps at the proper time. Unquestionably cases of birth palsies are attributable to the neglect of their use in prolonged labors.

The needless exposure of children to acute infectious diseases of childhood, which practice is still in use and strange to say by a class from whom it would be least expected, should be opposed.

In the acute postnatal cases, absolute rest together with purgation and cold applications to the head are indicated. This to be followed in a few days by the administration of some sedative, preferably the bromides. In the later stages when contractures with deformities have taken place, surgical measures may give good results. Orthopedic apparatus should not be overlooked in suitable cases. Massage, friction, and electricity to the paralyzed muscles may be used. The usual remedies should be used for the convulsions.

Many of these children are deficient mentally and to attempt to educate them as normal ones is certainly an injustice to them. This, however, I might say is frequently done. To impose this

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strain and stress on a child of limited mentality can certainly not result beneficially.

Permit me in concluding to briefly recite the histories of two cases, which I believe are fairly illustrative of the condition:

H. E. R.—Male. Aged 11 years. Family history on father's side negative. Scrofula said to be hereditary in mother's family. This is the oldest of three children in family, and was born prematurely. It was impossible to learn at what month. When four years old child had a "stroke of paralysis" following which there remained a paralysis of the right side. Speech remained unaffected. Convulsions with loss of consciousness occurred at intervals and continued up to the child's admission five years later. Mentally child was backward. This boy is smaller than the average child of eleven years, but is fairly well nourished. Mentally his condition is classed as medium grade imbecility. Vision is good; pupils react normally and eye movements are good. Hearing is good on both sides. Smell is unaffected. Movements of the tongue and facial muscles normal. The right arm is flexed at elbow and wrist, and is carried across chest. Fingers are flexed on palm. Very slight movement is possible at shoulder, as is also slight extension of forearm, but he is unable to extend wrist. Measurements at middle of arm show the right to be 8 1-2 inches in circumference, left 8 inches. At middle of forearm, right 7 inches, left 6 1-2 inches. On making passive motion considerable rigidity is found at elbow and wrist.

Equino-varus of right foot is present and much resistance is encountered on making passive motion of ankle. Motion at hip and knee is fairly good. The circumference of right thigh is 14 1-2 inches, left 13 3-4 inches; of right leg four inches below knee, 10 inches, left 9 3-4 inches. His gait is very much interfered with and leg is carried in a swinging manner. Patellar reflex is exaggerated on right side but normal on left.

Sensation is normal on both sides. Muscles respond normally to Faradic current on paralyzed side.

M. B. W.—Female. Aged 8 years. Father and mother both healthy and temperate. There are three children in the family, the other two being healthy, this being the oldest. This child was born at full period of gestation, the delivery being an instrumental one. Three weeks after birth commenced having convulsions and was said to have had "brain fever." Following convulsions was unable to move left arm and leg. After a time paralyzed arm and leg "drew up." Convulsions occurred not very frequently up to time of admission. Did not progress mentally and can say only a few words. A markedly hydro-

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cephalic condition is apparent by looking at this girl, the circumference of the head being twenty-two inches. She is well nourished, and of about the average size for her age. This girl's mental condition is one of medium grade imbecility, inclining, however, to a lower type than the preceding case. Vision is apparently good, pupillary reaction and movements of eyes normal. Tongue is protruded straight. Is able to say only a few words indistinctly.

Flexion of left arm at elbow and wrist, with considerable rigidity is present. Difference in circumference of right and left arm at biceps and middle of forearm is 1-2 inch in favor of the right. Slight voluntary movement of right arm is possible. The left foot is in equino-varus, it being impossible to rest heel on floor. Very slight movement can be made at ankle. The left leg is well nourished. Movement of hip and knee fairly good. Sensation normal on left side, as is also the muscular response to Faradic current. Patellar and radial reflexes are exaggerated on paralyzed side.

These cases are cited as being fairly illustrative of cerebral palsies, the second undoubtedly belonging to the prenatal group because of its early appearance after birth, together with the hydrocephalic condition which can be assumed to account for the instrumental delivery and to the direct causative factor of the palsy. I would be inclined to regard the first as a postnatal case. We can hope for little in these cases aside from training.

References: Sachs, Nervous Diseases of Children; Peterson, American Text-Book of Diseases of Children; Knapp, "Hemiplegia in Childhood," Journal of Nervous and Mental Diseases, Vol. 14, page 481.

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SECTION OF SURGERY

REPORT OF CHAIRMAN C. E. RUTH

C. E. RUTH, Keokuk.—Since joining this society 20 years ago I have so frequently imposed on the society in papers and discussions that I will present no report to you as chairman this morning believing it would be an absurdity in view of the fact that so large a number of the best men in the profession, in Iowa have volunteered to take part in the work of my section. I will therefore, ask for the regular order of business without any report from me.

The report of the summary of the proceedings of the House of Delegates was presented by the secretary. Said proceedings are published in full in this volume; therefore the report is omitted.

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HERNIA OF THE HEPATIC FLEXURE OF THE COLON INTO THE FORAMEN OF WINSLOW

A. L. WRIGHT, CARROLL, IOWA.

Hernia into the foramen of Winslow of either large or small bowel has been met with and reported but a few times. The uniformly disastrous results attending its occurrence in those cases, and the impossibility of recognizing the same during life, makes it one of special interest to the surgeon. But when the hepatic flexure of the colon is the portion of bowel involved in the constricted part of the foramen, we then have a form of hernia of great rareness and for obvious reasons seldom encountered, as may be readily understood when the anatomical formation of the parts is taken into consideration. The opening into the lesser peritoneal cavity is located close up under the liver, above the possible reach of the intestines, except the fixed portion of the duodenum that forms the lower boundary of the foramen itself in a downward direction. Or there is a defect in development and the mesentary of both large and small gut admits of undue mobility. The location of the colon is interposed and acts as a barrier to the passage of the small intestines toward this opening. The aperture is exceedingly small, rarely admits of more than one or at most the tips of two fingers. Those familiar with gall bladder work have more than once experienced difficulty in finding the foramen and getting their finger into the same. Mayo Robson has called our attention to the fact that in many gall stone cases, the irritation they produce frequently completely obliterates the entrance to the lesser cavity by dense, firm adhesions that renders recognition of any and all land marks impossible.

In the literature at my command I can find but eight cases reported of hernia into the foramen of Winslow, of both large and small gut. Mr. Moynhan questions the accuracy of four of those on account of the imperfect manner in which they are reported. There are but two cases on record of hernia of the colon into the lesser peritoneal cavity, one by Treves, the other my Majoli.

Mr. Moynhan says "after reading carefully the reports of all the recorded cases it seems to me almost certain that in order to

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permit of the occurrence of this form of hernia there must be some gross congenital abnormality." In the case reported by Mr. Treves the secondary agglutinating process had not taken place between the colon and posterior abdominal wall, and in my case the meso-colon was of unusual length. Lockwood described a case of unusual length of the small gut mesentary and considers it one of the essential requisites necessary, giving the bowels undue motility before hernia can occur.

Moynhan thinks that in addition to a long mesentary other anatomical defects must exist, any one of which will permit of a hernia at this point. "A common mesentary for the whole intestines, absence of the secondary fusion of the ascending colon to the posterior abdominal wall, and an abnormally large size of the foramen of Winslow." In the absence of any of these a hernia is impossible. The constriction takes place at the foraminal opening, which is bounded above by the liver, behind by the vena cava, below by the fixed portion of the duodenum, and hepatic vessels. In front by the lesser omentum containing the hepatic artery, portal vein and bile ducts. It is this anatomical arrangement of the foramen surrounded as it is by important vessels and structures that enter into its formation that makes the reduction of a hernia so difficult if not impossible.

The cases reported except the two above mentioned were hernias of the small bowel into the lesser cavity. In the case reported by Majoli a loop of the transverse colon had escaped into the foramen and was found to be gangrenous. Treves' case contained the caecum, the ascending and part of the transverse colon, and had become strangulated. In my own case the hepatic flexure of the colon had escaped into the foramen and had become strangulated. It was impossible to reduce even post mortem, without cutting vital structures.

The small number of cases met with of necessity limits the opportunity for observation and carefully noting the chronological order in which symptoms appear. They are however the usual clinical manifestations found in obstruction of the bowels, going on to sphacelation. The presumption is that a part of the gut gains access to the foramen and more and more slowly crawls in, until finally an acute strangulation occurs. This phenomenon may take place gradually and extend over a long period of time, giving rise to more or less disturbance with the stomach, so that the patient seeks relief for his dyspepsia or constipation as the case may be. During this time there is a tenderness or soreness in the upper part of the abdomen, over the tumefaction if any can be detected. This tenderness to the touch in the upper abdomen gradually ripens into the most excruciating pain imaginable. It is one of the first symptoms

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when an acute strangulation occurs. It is usually most intense in character. Located at or just above the umbilicus. The severity depends largely on the amount of traction made on the mesentary, especially on the small gut mesentary. The pain is a cramp of the most intense character, shutting the patient up like a jack knife. They become faint and break out in a cold clammy perspiration. Vomiting usually precedes the onset of the most intense suffering. I have noticed this clinical manifestation more than once in other pathological forms of intestinal obstruction, that has asisted me in differentiating between that and acute inflammatory conditions within the abdomen. In the latter pain occurs first followed by vomiting. In the case reported by Treves, vomiting however did not occur until the day following the onset of the pain.

There are remissions in the pain, while it does not entirely let up, there are periods when the suffering is not so intense as at others. The pain continues until near the end, as dissolution approaches the suffering grows less and finally stops. The vomiting however continues until death takes place.

An epigastric tumor has been detected and described by Majoli and Treves. In my case I was unable to detect any tumor, it may have existed and not been appreciable however, owing to the tympanites so distending the abdominal cavity, as to preclude outlining the same. The abdominal distention was uniform although not great. Theoretically we would naturally expect the greatest amount of tumefaction above or at the umbilicus. Moynhan states, "that light percussion over the tumor when present is dull but that deep percussion sounds a fairly resonant note."

Majoli's case suffered more or less for a month from constipation and pain, there were other so-called dyspeptic manifestations as eruction of gas, loss of weight, a tumor appeared after a time in the upper abdomen. Vomiting began before the severe pain started, and finally became stercoraceous. This man suffered for six weeks from the commencement of his gastric symptoms to the close. The acute symptoms lasted about a week. Post mortem showed the greater part of the transverse colon strangulated in the foramen of Winslow.

Mr. Treves case was sudden in its onset, after partaking of a hearty meal the man was seized with severe pain in the upper half of the abdomen, vomiting set in the second day, but never became stercoraceous. Four days after the onset of pain the bowels were opened by an enema that greatly relieved the symptoms for a time. On the eighth day of the attack the abdomen was opened and a hernia into the foramen of Winslow recognized, all attempts failed to reduce it, the patient died six

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hours after. The bowel was gangrenous and all efforts at reduction futile until the hepatic artery, portal vein and bile duct had been cut.

The following is a brief history of my case: Detlef K., age 15, of German parentage, had always enjoyed good health until the onset of his last illness about December 7, 1902, while wrestling at school he felt something "slip within the belly," as he expressed it, thereafter he never felt right. There was more or less uneasiness and distress that gradually increased until it developed into colicky pains by the third or fourth day. At this time Dr. E. M. Farquhar of Early was called. A saline cathartic was given that was promptly rejected, this as near as we can get at it was the first time he vomited. The people were ignorant and very apprehensive, did not note the order in which the symptoms appeared. Vomiting continued at frequent intervals until the end. On the third day it had a decided fecal odor. During the first twenty-four hours after the doctor assumed charge of the case all of the usual remedies resorted to for the purpose of producing free catharsis were given with negative result. At this time recognizing the gravity of the case he urged surgical interference which was likewise rejected, until finally the parents were convinced against their will that relief must come through some other channel than the administration of drugs. December 15 I was called. This was the eighth day of the boy's illness, and the fifth after the attending physician had first urged an operation. His condition was bad, he had a rocky pulse that forbid interference, the appearance was pinched and anxious, the characteristic expression indicating dissolution near at hand. His restlessness was constant and suffering most intense. With a full understanding of the gravity of the case and improbability of a successful issue at this late hour, at the solicitation of the father I opened the abdomen and recognized that the hepatic flexure of the colon had slipped into the foramen of Winslow. At this time my patient ceased to breath, all efforts at resuscitation failed. Seeing that my patient was dead I then continued my investigation until the case was clearly proven beyond the question of a doubt that we were dealing with a hernia of the hepatic flexure of the colon. All efforts at reduction were of no avail, nor could I reduce the hernia until I had cut the anterior margin of the strangulating foramen and its accompanying vessels and duct. The angle of the colon was gangrenous.

When called to a case of intestinal obstruction although it may be too early to make a diagnosis, the condition of the bowels is only a symptom of an unknown pathology, one thorough attempt should be made to empty the alimentary canal

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and the patient then put to bed and let alone. If it fails, hot applications to the abdomen may afford some relief, keep the friends busy, and divert their attention. Food and drink should be withheld, the question of nourishment does not enter into these cases, as the course of the disease is short. The intense thirst can be satisfied by rectal injections of three or four ounces of a normal salt solution every four hours. Food and drink in connection with moving about increases peristalsis, the pain and vomiting. By these the local condition is aggravated and the patient made worse. To diminish the peristalsis and increase the intestinal rest one or more doses of morphine under the skin is best, bearing in mind that it masks the symptoms and should be given cautiously before a diagnosis has been made. The lower bowel should be thoroughly washed out by a copious enema.

In the light of the two cases operated upon there seems but one course to pursue, that is operate, as the anatomical formation of the foramen of Winslow precludes all atempts at reduction except traction on the strangulated portion of the gut, this must be made early while the adhesions are yet young, the pull must be gentle or otherwise the bowel will be torn. If nothing more can be done make an artificial anus, or if the condition of the patient will permit an entero-enterostomy should be made. This may be done at a later day if the condition of the patient prohibits at the time. The lesser peritoneal cavity must be drained in order to get rid of the detritus found therein. To meet with success in all cases of bowel strangulation, interference ought to be made early, before adhesions are strong and the integrity of the gut has been seriously compromised. Laporotomy in itself is not a serious operation, the disastrous consequences depend not on the operation but on the pathological conditions found within the abdomen for which the operation is performed at too late an hour.

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SUPPURATION ABOUT THE APPENDIX, CONSIDERED FROM THE STANDPOINT OF ANATOMY AND SURGERY

GILBERT GEOFFREY COTTAM, M. D., ROCK RAPIDS, IOWA.

The location of periappendicular abscesses is as variable as the direction of the appendix itself, to account for which one must delve deeply into antecedent matters. There is no more interesting field of study in all comparative anatomy than that of the evolution of the cecum and its associated structures from the simplest forms until the human form is reached, afterward tracing the development in the latter from the earliest embryonic beginnings. Only by a patient mastery of these details can we understand the many variations which are noted in our practical observation of the appendix in health and disease.

These variations, be it understood, are variations chiefly of size and direction. The position of the cecum in the abdomen and that of the fixed portion or base of the appendix are fairly constant, and a proper appreciation of this point is of great practical importance. Owing to the limited range of movement of the free end of an appendix of normal length, we find that abscesses occurring as a result of inflammatory changes in it are bound to occupy some anatomical relationship to the ascending colon; this affords, therefore, a very convenient fixed point for descriptive purposes. Another important anatomical point, all abscesses of appendicular origin must necessarily occur either in front of or behind the posterior parietal peritoneum; in the former instance they are intraperitoneal, in the latter, extraperitoneal.

Out of these data I have constructed a classification of periappendicular abscesses which has the advantage of being anatomically and clinically reconciled and includes all the varieties met with except those which are so rare as to be classed as curiosities rather than types. The classification is as follows:

Abscesses of appendicular origin	Intraperitoneal	Internal to colon Anterior to colon External to colon Subcecal Distal (inter-intestinal, pelvic, etc.)
	Extraperitoneal	Retro-colonic (the "iliac phlegmon" of the older writers)

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Those which lie internally to the colon are either above or below the mesentery of the ileum. In the former case they tend to take an upward direction, toward the diaphragm, in the latter the tendency is downward, toward the pelvis. They may be either superficial or deep; in the latter instance not easily recognized by reason of the deceptive tympany of the overlying hollow viscera. Evacuation in either case is best accomplished by the longitudinal incision in the right linea semilunaris. Where the abscess is below the mesentery of the ileum and the pelvis has become secondarily involved in the case of a female patient, it is very desirable to open the cul-de-sac of Douglas through the vagina and institute through and through drainage.

Abscesses forming on the anterior surface of the colon, likewise those external to it, are superficial and readily diagnosed. I much prefer a low, oblique incision to any other for their evacuation. This incision is also the best for reaching the retro- or sub-cecal abscesses, a variety not always easy of diagnosis. A peculiarity of them is their proneness to bring about obstructive symptoms, associated with grave toxemic manifestations. Grinda (Med. Modern No. 71, 1897), gives these as the symptoms of retro-cecal suppuration, tenderness over the triangle of Petit; but little, if any, pain at McBurney's point; marked fulness in the right flank; and a clear sound on percussing the right iliac fossa.

The inter-intestinal suppurations are the least satisfactory of any, from a surgical standpoint. The incision is made directly over the tumefaction and unless adhesions to the anterior abdominal parietes have formed, contamination of the general peritoneum can hardly be avoided. If adhesions have not formed, the operation can be done in two stages, as proposed by Harris, but if the condition of the patient does not warrant delay, then immediate evacuation may be attempted after packing gauze between the intestines and parietes through the incision.

The last variety to be considered is that of extra-peritoneal location, the most important of any, for in this case blunder of diagnosis or operation almost inevitably means disaster. It is well to recall that suppuration here may occur in any one of three ways, yet all directly connected with appendix disease. We may have it due (1) to infection from an inflamed appendix situated extraperitoneally; (2) to posterior perforation of an anteriorly located appendix which has become adherent to one or other layers of the meso-colon, or (3) to lymphatic transmission of infection from an anterior appendix. The symptomatology is indefinite. In the beginning we may have all the symptoms of an anterior appendicitis. These may largely subside, yet symptoms of resolution be unaccountably delayed.

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Evidences of septic absorption begin to manifest themselves insidiously, yet no physical signs of abscess formation. As the suppuration increases, however, deep percussion over the lower part of the ascending colon reveals some dullness, which becomes more marked by gradual degrees.

All cases of delayed recovery with toxemia after attacks of appendicitis treated expectantly, where there is not rigidity of the anterior parietes to indicate an anterior abscess formation and where there is no apparent reason for that delayed recovery ought to make one suspect and watch for retroperitoneal infection. All cases of vague symptomatology, in which we strongly suspect appendicitis but are uncertain by reason of the very atypical course the attack follows; where there is a peculiar lacking of really acute symptoms, such as sharp, colicky pain, acute sensitiveness to pressure, rapid pulse and persistent vomiting, yet all of these symptoms present in some degree, it is strongly probable that we have to deal with an inflamed appendix situated extraperitoneally and if abscess-formation supervenes, it will, of course, occupy the same locality.

A positive diagnosis is not always possible; some operations must therefore be of an exploratory nature. The best incision for determining the presence of pus in the post-colonic space and of evacuating it with the best opportunity for drainage afterward, is one which begins at the outer edge of the sacrolumbalis and follows the curve of the crest of the ilium in an anterior direction. This makes the operation entirely extraperitoneal. Should by any mischance the abdomen be opened anteriorly and the real condition made out, it is proper to close the anterior incision at once and make the posterior opening as just described.

In conclusion, I commend to your notice this subject of the pathological anatomy, symptomatology and treatment of periappendicular abscesses. It will force itself upon our attention in the near future more than ever before, since so many practitioners, from a mistaken interpretation of Ochsner's teachings, are treating their appendix cases expectantly in the early stages, and it is more than probable that the immediate result will be that a larger proportion of abscess cases than hitherto will demand attention. The mortality rate in operations for abscess cases should be very low and a proper understanding of the conditions present in each case should reduce it to the minimum.

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Discussion on the Paper of Dr. Cottam

E. H. King, Muscatine.—Appendicitis is a condition liable to appear in every one's practice and when complaint is made of a pain in the abdomen, we at once investigate whether or not appendicitis is present. The most perplexing cases we have in diagnosis are the retroperitoneal positions of the appendix, where we can not determine satisfactorily, by examination, in which positions the appendix lies and in which direction the pathological condition may take place. In a case in my practice, a young man was taken suddenly with violent pains and gave all the symptoms of approaching appendicitis. He was treated, for four or five days by the family to get his bowels open. Finally coming under my care he went to the hospital. He absolutely refused an operation, consequently had to be treated in other ways. The case lingered along for some six weeks with general symptoms of toxemia. We could not locate any tenderness in the region of the appendix and there was no rigidity, and yet I was satisfied there was a deep abscess but we could not locate it. He had a moderate temperature, never went above 101 and he finally insisted on leaving the hospital, that he was well, that he wanted to go to work and yet there was a gradual emaciation and septic symptoms, especially in the temperature. Finally there was a tenderness in that region and he died and the autopsy revealed there was an abscess in which the pus had burrowed from the appendix—that was the starting point—clear up to the spine in the region of the liver and we had secondary infection. I was satisfied there was a deep abscess from the general symptoms and yet there was no definite symptom that enabled me to locate the abscess. An early operation might have reached the appendix and been effective but a late operation would have been of no avail.

T. B. Dorsey.—The observation of all of us to the exact position that we may find the appendix is variable. We may think we have one exactly located, for instance it may be superficial, and yet the abscess may be down in the pelvis. Another point, in relation to temperature and pus in these cases, I believe it is true that it is very difficult to diagnose the conditions between resolution in some cases and the presence of gangrene or pus in others. It has only been too often observed that the sequele in those cases make us regret that early operations were not insisted upon, therefore we would conceive the idea that any case is unsafe, even in the presence of a normal temperature and a normal pulse and even in the absence of pain, until the appendix is removed.

Van Buren Knott, Sioux City.—Two or three points in the paper of Dr. Cottam should be accentuated. One is the

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importance of making the incision in these cases, from the swelling, having no regard whatever to anatomical consideration, so far as the general location of the appendix is concerned. The incision should be made, as he states, in his paper, at all times from the center. By so doing, you are more apt to go through the adhesions without danger of soiling the peritoneal cavity. Another point suggested by the doctor which is an extremely good one and which I have practiced several times with great satisfaction; after making an anterior incision for a case of appendicitis, with abscess, and finding a pus collection which is extraperitoneal, close the anterior wound, going around the cavity and making a posterior incision, draining the pus away without any danger of soiling the general peritoneal cavity, with resulting peritonitis. Those two points I consider of importance in the treatment of the patient.

C. E. Ruth, Keokuk.—Just a word on the point which is brought out by Dr. Knott with reference to extraperitoneal presence of pus, or the possibilities for evacuating pus extraperitoneally. I have called attention in an article or two to the fact that in very many cases of appendicial abscess upon incising the tissues the presence of air bubbles is detected or infiltration of the abdominal wall or an edemetous condition in the cellular or connective tissue underneath or between the layers of muscular tissue—detecting this before the peritoneum is opened I have taught for years that you can always open the abscess extraperitoneally and though I have been able to search myself quite a little, I have never, as yet, failed in I think twenty cases at least, in opening an abscess in that way, not going through the peritoneum, but simply follow down behind the point that the appendix is probably attached to the colon and in this case the abscess has passed under the fold between the diverging layers of the mesentary that surround the appendix and has thereby gained access to the retroperitoneal fold in the iliac fossa.

T. B. Dorsey.—With reference to what Dr. Ruth has said, the same condition will be observed where the abscess is introperitoneal and has adhered to the posterior wall and therefore it is an impossibility on that point, in my opinion, to differentiate between the extra and intro. I am simply taking exception on the point of differentiating diagnosis.

G. G. Cottam, Rock Rapids.—In my experience I do not remember ever opening the abdomen in a case of appendicular abscess that I did not find a well marked condition of emphysema of the abdominal wall. That has been my experience.

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C. F. WAHRER, Ft. Madison.—I would like, at this time, to offer a resolution, as follows:

"That since our last meeting in Sioux City, this society has suffered a deep loss in the death of its second vice president, Dr. D. M. Wick of Cedar Falls. Be it therefore resolved, that we recognize in this death, of a faithful member of our society, a gentleman of the highest type, a wise medical man and a true friend of the profession."

E. H. KING.—I move its adoption. (Seconded by Dr. Dorsey). Adopted.

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SYSTEMATIC EXAMINATION OF THE BLOOD

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In presenting a paper with this title before this association, it is with the idea, first, of emphasizing the importance of making a diagnosis before the operation, rather than to make the operation before the diagnosis. Second, to indicate lines along which more exact diagnosis, and diagnosis more in detail should be made than has been the general custom of the past. Third, for the purpose of giving cognizance and recommendation of methods valuable for diagnosis which have only of late come into importance, but which are too seldom used.

Regarding the first point, that of making the diagnosis before the operation, little need be said farther than to enter a protest against the too frequent practice of some good surgeons who expose their patients to even the very small risk incident to their aseptic technique by operations occasionally not indicated and which would not have been undertaken had they been as careful in their diagnosis as they are in their methods for procuring and maintaining asepsis.

As to the second purpose, I would cite the need of more detailed diagnosis in the infectious and toxic diseases. For instance: If a patient is suffering from a local wound and general infection or toxaemia results, it is not sufficient to say the patient has blood poison, but the intelligent practitioner will determine what form of blood poisoning is present, whether it is a sapreamia due to absorption of the toxines of putrefaction, or to a septicemia with the germs themselves living and multiplying in the blood, together with their toxines or to a pyaemia with its metastatic abscesses, nor is this sufficient, but the sapraemias, septicemias and the pyaemias are to be further differentiated, as for instance: In a septacemia or even a pure toxemia, it is important to distinguish between a staphylococcus or streptococcus infection if it is a pure suppurative process, not only as regards prognosis, but also for considerations of treatment.

The science of serum therapy is certainly being established on a sound basis and adding to the therapeutic armamentarium

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of the progressive surgeon as well as physician, and its rational administration is dependent on detailed and exact bacteriological diagnosis.

Moreover, besides determining the nature of the chief infecting agent, it is important that the cases of mixed infection be resolved and to make known the nature and kind of the complicating bacteria. For certain germs, which of themselves are of little or no pathogenic power become quite virulent, and seriously complicate the condition when present with other kinds, as is the case with the well known colon bacillus. Another important field for diagnosis, especially in pelvic or intra-abdominal abscesses, is the determination of the original agents of infection and whether a given sample of pus is virulent or not, for its bearing on the question of drainage, it being unnecessary to drain if gonococci alone are present, or when as is often the case in chronic abscesses the pus is entirely sterile, the original causative germs having disappeared. In this connection I would quote Prof. Warren of Harvard University. In the preface to his work on "Surgical Pathology and Therapeutics," he says:

"No young practitioner can be regarded as thoroughly equipped for surgical work who is not both a good pathologist and an expert bacteriologist. The confidence born of a knowledge of pathology and bacteriology enables him to assume grave responsibilities and to grapple successfully with the most complicated problems. It is from men thus equipped that we have a right to hope that the future masters of surgery are to be evolved."

This brings me to the consideration of the third and main purpose of the paper, viz: The emphasizing of the importance of a routine method of examination of the condition of the blood in a great many pathological conditions and of its bearing on the departments of diagnosis and prognosis.

Examination of the blood gives positive diagnosis probably in only five or six diseases. It helps in many others, often giving the missing link in a chain of evidence, as in a central pneumonia, a suppurating ovarian cyst or other deep seated suppuration; also the prognosis of post scarlitinal nephritis or pneumonia. Moreover, the important significance arising from the findings of a normal blood are important. The examination of blood is similar in importance and in its evidence to that of the urine. But as the blood acts on every tissue, and organ of the body, and in turn is acted on by them more in degree and in more ways, than any other tissue or product one can readily perceive the value of determining its condition in the great departments of diagnosis and prognosis.

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In fact, the examination of the blood throws light on every febrile disease. The examination can be done, and all the important data be determined in fifteen minutes. From fresh blood we can learn of the presence of the Plasmodium of malaria, the Spirochaetae of Relapsing Fever, the Filaria Sanguinis Hominis, the formation of rouleaux of the red blood cells, approximately the amount of fibrine, the variety and ratio of the various corpuscles in the various kinds of anaemia; the existence of leucocytosis or of poikilocytosis, the amount of hemoglobin in the red corpuscles, and the number of blood plates.

Secondary anaemias of all kinds, as produced by surgical diseases, as malignant disease, chronic suppuration, all infectious and febrile diseases show normoblasts in the blood. Moreover, the prognosis of all surgical diseases is influenced by secondary anaemia, best determined by the microscope.

Pathological leucocytosis is of several kinds. (1) Posthemorrhagic; (2) inflammatory; (3) toxic; (4) in malignant disease; (5) those due to therapeutic agents. Hemorrhagic leucocytosis with an increase of 16,000 to 18,000 leucocytes per Cu. M. M. often follows within an hour after a severe hemorrhage. In a surgical operation, shock not infrequently occurs from a concealed hemorrhage. These concealed hemorrhages may be primary or secondary or both. Shock from a concealed primary hemorrhage would be caused in an operation with but little hemorrhage, but in which it has been imperfectly controlled before closing the wound. In either case the diagnosis is sometimes difficult to make. If however, a blood count was regularly made before all surgical operations especially intra abdominal much light might be thrown on the diagnosis.

Lymphocytosis is a relative increase of the lymphocytes in the blood, and is the chief point in diagnosis of glandular tumors from leukemia. Obscure syphilitic disease is associated with lymphocytosis and eosinophilia, that is, an increase of the eosinophile cells in the blood.

Eosinophilia is significant in the following conditions: 1. In the diagnosis between puerperal mania and puerperal sepsis the existence of eosinophilia points to the latter. 2. Between a tumor connected with the genital system and one not so connected, it points to the former. 3. An operation of castration for hysteric neurosis or psychosis, is more apt to result beneficially if eosinophilia is present than absent. 4. In malignant disease with absence of tumor of the spleen, eosinophilia indicates metastases of the osseous system. 5. Eosinophilia is more frequent in malignant disease of the liver than in other

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diseases of the liver. 6. Eosinophilia favors the prognosis in chlorosis, scarlet fever, scarlitinal nephritis, hemorrhagic and pernicious anaemia.

As regards the amount of fibrine in the blood as determined by the microscope, we note that it is not increased in malignant disease as it is in suppurative conditions, therefore in diagnosis between malignant disease and deep suppuration, increase in fibrine pointed to the latter..

Relative to the amount of hemoglobin, Mikulicz of Breslau says never operate when the hemoglobin is below 30 percent.

Given a case of shock from trauma, the question of when to operate is often a puzzling one; if the shock is due to hemorrhage, operation and transfusion are indicated, but if due to cerebral concussion or compression, contraindicated, and a blood count would help to decide; likewise in ruptured tubal pregnancy. Other concealed hemorrhages as in rupture of the liver, kidney or spleen, may be indicated by leucocytosis when other signs fail.

A proper blood examination distinguishes leukemia from 1, Hodgkins' disease; 2, irregular splenic tumors and tumors in the region of the spleen, as of the kidney, retroperitoneal glands, etc.; 3, enlargement of the lymph glands, due to tuberculosis, cancer or syphilis; 4, hydro-nephrosis; 5, chronic malaria; 6, amyloid disease; 7, marked leucocytosis from other cause, as inflammation, suppuration, etc.

Typhoid fever almost always shows an absence of leucocytosis. On the other hand almost all local inflammations or septicaemic or pyaemic conditions are associated with a leucocytosis. Differentiation in such cases is often necessary and a proper blood count gives great aid. Moreover, given a case of typhoid fever, with absence of leucocytosis the appearance of the latter in the course of the disease, generally indicates some surgical complication.

Appendicitis and allied conditions as abscess show important blood findings. Thus: (a) Leucocytosis is always present unless the case is very mild or very severe, therefore its absence in a case which shows any other one bad symptom, makes the prognosis extremely bad, and its absence in a case without any other one bad symptom makes the prognosis very good. (b) An increasing leucocytosis is more significant than a large count of leucocytes not increasing. (c) When the abscess is walled off, the number of leucocytes remains the same or decreases. Thus with a given case of appendicitis with a small number of leucocytes we have one of three conditions, either a very mild one, a very severe one, or an abscess walled off from the general peritoneal cavity. (d) Marked increase in the

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number of the leucocytes after the number has been stationary, indicates badly, and generally a rupture of the abscess. (e) 18000-25000 leucocytes per cu. m. m., for several days means a large cavity well walled off. (f) Very large counts mean a very large abscess or a general peritonitis.

In the differential diagnosis of appendicitis the presence of a marked leucocytosis of 18000 to 25000 leucocytes excludes colic and uncomplicated intestinal obstruction, also moveable kidney, as between general peritonitis and appendicitis; over 30000 leucocytes points to the former but may be in both.

To give enema or a cathartic in appendicitis sometimes breaks the wall of lymph and fibrin around the abscess and does harm. If the absence of leucocytosis indicated only fecal impaction, enema and cathartics would be both indicated.

A ruptured tubal pregnancy or pelvic haematocele would give a leucocytosis but no increase in fibrin as there would be in appendicular inflammation. Moreover in the former there would be a decrease in the red blood corpuscles.

Pus tubes, pelvic abscess and pelvic peritonitis present much the same findings as are seen in appendicitis, so what has been said of it applies also to them.

First—Increase in the number of leucocytes points to the need of an operation.

Second—Stationary leucocytosis indicates an abscess walled up.

Third—Size of the count approximately indicates the size of the abscess.

Fourth—Cases with little or no leucocytosis need no operation, or at least rarely so.

Fifth—Endo-Metritis, cystitis, and the various pelvic neuralgias, generally produce no leucocytosis and may be excluded.

Sixth—Septicemia is generally post partum or following abortion and often a cover glass preparation and culture of bacteria may be obtained from the blood, determining the condition present.

Seventh—A hemorrhagic leucocytosis from a ruptured tubal pregnancy or either menorrhagia or metrorrhagia have their peculiar clinical histories.

In Otitis Media leucocytosis is present in all its forms. There is a small number of leucocytes in serous inflammation.

A greater number in the purulent and quite high when the mastoid process is involved.

In osteo-myelitis blood examination is very important for from the other symptoms alone it is often hard to be sure whether an operation is indicated or not. Rheumatic pains, "growing pains" and neuralgias may be excluded if leucocytosis is present.

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Diagnosis between a cyst of the kidney and a perinephritic abscess is aided by the fact that the latter causes a leucocytosis and the former does not.

In cancer of the kidney and abscess of the same, both may cause a leucocytosis, but increase of fibrin points to the latter. Likewise cancer of any organ may be distinguished from an abscess of the same by the fact that abscess is generally associated with an increase of fibrin, whereas the cancer is not.

Hayem, the great French authority on the blood insists that clinicians could secure great aid in all doubtful cases involving the lungs and pleura from the following rules: First, pure tubuculosis shows no leucocytosis. Second, serous pleurisy shows on an average a leucocytosis of 8,000 leucocytes to the cubic milimeter. Third, emphysema shows on an average 18,000. Fourth, cancer of the lungs is still higher amount but less fibria. Fifth, the average in pneumonia being 24,000.

In affections of the peritoneum we may state the following rules: A. Leucocytosis is present in inflammation and cancer. B. Is absent in tubercular, hysterical and malingering conditions, phantom tumors, etc. C. But as elsewhere, cancer shows no increase of the fibria.

Regarding serous membranes of the heart, a pericarditis is more apt to produce a leucocytosis than will an endocarditis. Tubercular varieties never do unless complicated, thus a pericardial effusion is indicated when diagnosis lies between it and cardiac hypertrophy, or dilitation with poor compensation if leucocytosis is present; and, if we are sure an effusion exists with an absence of leucocytosis, we may conclude with great certainty on tubercular infection.

In conditions affecting the brain, we note, first, that meningitis, abscess, and apoplexy each causes leucocytosis, therefore the presence of leucocytosis would exclude other causes in a given case of coma. Second, brain tumor, hysteria, lead poisoning, diabetic coma, sun-stroke, narcotic or alchoholic intoxication, do not increase the number of the leucocytes. Third, typhoid fever is sometimes hard to diagnose from meningitis, but a typhoid uncomplicated never shows leucocytosis where meningitis always does.

In syphilis Justus reported a large number of bad cases in the primary stage with a peculiar reaction to mercury. In that a single dose of mercury decreases the amount of hemoglobin 10 to 30 percent, to be followed within a week with restorations to the normal. The reaction is said not to occur after the eruptions of the secondary stage.

In adults a leucocytosis with relative increase of young leucocytes and eosinophile suggests syphilis as opposed to tu-

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berculosis, typhoid or cancer. In children the rule does not hold. However the chief value of the blood examination in syphilis is to measure its severity, rather than to diagnose the disease; thus a low percent of hemoglobin and a high percent of young leucocytes indicates a severe infection. It is to be noted, moreover, that leucocytosis is not present until after the eruption. Myelocytes and marked anaemia in tertiary stage makes a grave prognosis. The severe tertiary stage may be diagnosed from pernicious anaemia first in syphilis there is a small amount of hemoglobin in each red blood corpuscle. That is, there is a low color index. And being high and in pernicious anaemia. Second, in syphilis there is a leucocytosis which is generally absent in the other affection. Third, in the anemia of syphilis there is a relative infrequency of megaloblasts as compared with the normoblasts. The converse being true in the pernicious form of anemia.

In a jaundice with leucocytosis, simple catarrhal form may be ruled out and the indications point to a malignant disease or inflammatory condition of the liver, and again, abscess and malignant disease are farther differentiated by an increase of fibrin in the former.

In malignant tumors there are several important diagnostic points to be revealed by the blood. First, in an obscure deep seated disease persistent leucocytosis indicates suppuration or malignant disease. Second, absence of leucocytosis does not necessarily exclude malignant disease, but does exclude suppuration. Third, between suppuration and malignant disease, absence of increased amounts of fibrin, speaks against separation, but its presence may occur in either. Fourth, between malignant disease and hemorrhage marked anemia indicates the former. Leucocytosis is present in both. Fifth, between cancer and ulcer of the womb or stomach if there has been no recent hemorrhage leucocytosis is in favor of cancer. Sixth, in cancer the decrease in hemoglobin is continuous. In ulcer there is a tendency to restoration to the normal after stoppage of the hemorrhage. Seventh, presence and persistence of a leucocytosis, one to three hours after meals speaks for ulcer. Eighth, simple cysts, echinococcus cysts, gall stone colic without inflammation or simple obstruction from gall stones do not cause leucocytosis. Cancer and gall stones with inflammation or abscess do cause leucocytosis. Nine, during the course of malignant disease the presence of a large number of eosinophile cells, myelocytes and nucleated red blood corpuscles point to bone metastases. Tenth, disappearance of a leucocytosis after an operation for removal of malignant disease, and its recurrence points to a return of the growth. Eleventh, steadily in-

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creasing leucocytosis in malignant disease points to a rapidly growing tumor or to a metastisis. Twelfth, malignant disease is differentiated from pernicious anemia as follows: a. The color index is low in the malignant disease, high in pernicious anemia. b. Leucocytosis often present in malignant disease, absent in the pernicious anemia. c. Lymphocytes are decreased in pernicious anemia. d. The average size of the red blood cells increase in the same disease. e. If nucleated red blood corpuscles are present there are more normablasts in malignant disease. f. In pernicious anemia there are more megaloblasts. Lastly the presence of a leucocytosis is against the benignancy of any tumor if inflammation may be excluded and when there is no actual increase in the number of the leucocytes, a relative increase of the adult, poly-morpho-nuclear variety may have the same significance of a leucocytosis.

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ABDOMINAL DRAINAGE

VAN BUREN KNOTT, SIOUX CITY, IOWA.

Drainage of the abdominal cavity after operation has been much discussed the last few years during which time the views of surgeons concerning it have been greatly modified.

During the early eighties fully eighty percent of all laparotomies were drained. You can all remember the assortment of glass drainage tubes, curved and straight, which were at that time considered such an essential adjunct to the surgeons armamentarium. In those days the coeliotomy which was not drained by one of these small glass tubes leading from the pelvis to and through the abdominal wall was indeed rare.

Gradually this idea of wholesale drainage became modified until about 1890 all clean cases were closed without drainage but every one with a suspicion of infection was drained. In other words abdominal drainage was then employed in about 30 percent of all cases whereas ten years before it had been employed in 80 percent. From 1890 to 1896 individual operators, and there are so many who claim priority that to accurately place the credit is impossible, began to discriminate still more closely between the cases for drainage and those for complete closure with the result that the percentage of drained cases was still lowered.

In 1896 J. G. Clark published his noteworthy article upon the subject in which he gave his conclusions from a study of one thousand seven hundred abdominal sections. This article was the death warrant for indiscriminate and unwise drainage of the peritoneal cavity and placed the question upon a more scientific basis than it had yet occupied. From the physiologic researches of others as well as his own he showed that the peritoneum was not such a foe to the abdominal surgeon as it had been too long considered but on the contrary was one of his most reliable and useful allies. In other words the peritoneum could and would take care of a certain amount of infectious material without appreciable damage to the patient.

Since 1886 the tendency to drain has grown steadily less until today the percentage of drained cases is very small.

Abdominal drainage may be either a curse or a blessing and nice discrimination is at times demanded in determining

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whether it should or should not be employed. While abdominal drainage when indicated is life saving and for that reason invaluable, when not indicated it may be the source of real danger to the patient. Cases are reported where a fatal infection, originating from without, has descended along the drainage track.

Hernia after abdominal drainage is a frequent occurrence and patients should not be needlessly exposed to either of these dangers. However the condition of those cases demanding drainage is usually so serious that the occurrence of hernia is of little moment. If the patient can be tided over the immediate danger of peritonitis and infection the weakened abdominal wall may be easily repaired later.

A live man with a ventral hernia is much better than a corpse with a sound abdominal wall.

It has appeared to me that the enthusiasm with which the doctrine of non drainage has been received has been responsible for frequent abuse of the principle. The pendulum has swung too far and some cases are denied drainage which would be better with it. How many of you are there who have not had to establish drainage upon the third to the seventh day in some case of ruptured tubal pregnancy or pyosalpinx which you closed at the time of operation? I do not remember an instance where I have regretted the establishing of abdominal drainage. I can recall several in which I had cause to regret that I had not employed it. I do not wish to be considered as an exponent of the old plan of draining all or 80 percent of laparotomies. Far from it. I believe that unnecessary drainage is bad practice and rejoice that we have been able to so reduce the indications for its employment. However in our desire to still further limit these indications I think we may err upon the other side and I wish to protest against too frequent closure of an infected peritoneum. When this peritoneal infection is widespread as in diffuse septic peritonitis we find no difference of opinion, all such cases are drained, but when small and comparatively circumscribed areas are involved we find some men closing cases which another would drain and vice versa.

In determining, in such cases, whether to drain or not to drain the most vital consideration is the character of the infection. Peritoneal infections present the same variation as to intensity and virulence as infections elsewhere, those due to certain causes being always much more serious and fatal than others. The peritonitis set up by gastric or intestinal perforation with extravasation of septic material into the peritoneal cavity is always of a violent and dangerous type while that accompanying a gonorrheal salpingitis is frequently much less

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severe. Peritonitis due to a ruptured gall bladder may or may not be quickly fatal depending upon the nature of the infectious material escaping from that organ.

Infection of the peritoneum by the bacillus tuberculosis results in a slow progressive peritonitis while that induced by the streptococcus is almost invariably most acute and rapidly fatal.

We have three important guides to assist us in deciding for or against drainage in any given case.

1. The previous history and present condition of the patient.

2. The gross appearance of the peritoneum and its fluid contents as revealed at the time of operation.

3. The degree of completeness with which it has been possible to conclude the operation.

THE PREVIOUS HISTORY AND PRESENT CONDITION.

The progress of a case for some time preceding and up to the day of the operation furnishes much valuable information as to the severity of the infection which may be present and the best way to meet it.

Take for instance cases of suppurating ovarian cysts. Such cysts will usually be found more or less adherent to the surrounding tissues and during their enucleation rupture of the cyst wall with escape of the contents will frequently occur. Of course such accidents have been anticipated and its tendency to do much harm minimized by a barrier of well placed gauze packs to prevent widespread extravasation of the fluid.

Nevertheless the soiling of even a small area of the peritoneum in this manner gives us much concern. In such cases the history is of most importance for by it alone must we often decide as to the course to be pursued. The gross peritoneal appearances are more or less similar in all such cysts and their complete removal is usually accomplished so that these two guides avail us little. We have not time while the patient is on the table for a bacteriological examination of the cyst contents yet some of these cases should be drained and many of them should not. If the infection of the cyst contents has occurred but a short while previously and the patient from that time up to the day of operation has presented the symptoms of infection including elevated temperature, a rapid pulse and increased abdominal tenderness the cyst contents must be considered as highly infectious and the contamination of even a small portion of the peritoneum by such fluid during the operation should be followed by drainage preferably through the vagina. On the other hand the writer has seen several cases

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in which the history pointed to a severe peritonitis, which occurring several months or possibly years before, had subsided and the patient came to operation with a normal pulse and temperature presumably for a simple ovarian cyst with serous contents. At the time of operating the sac was found filled with creamy pus and at times some of it was unavoidably allowed to escape over a more or less limited peritoneal area. In such cases the fluid was regarded as sterile and after thorough cleansing of the soiled peritoneum complete closure without drainage has been made.

THE GROSS APPEARANCE OF THE PERITONEUM AND ITS FLUID CONTENTS AS REVEALED BY OPERATION.

Probably the most reliable information concerning the necessity for abdominal drainage may be gained from the appearance of the peritoneum and its fluid contents, if we exclude contamination of this membrane from gastric or intestinal perforations which regardless of the degree to which the peritonitis has advanced always calls for drainage.

When the peritoneum although deeply injected preserves much of its general color and lustre and its fluid contents are but slightly milky or turbid a complete operation, that is, one which effectually removes the source of infection may usually be followed without drainage.

When the peritoneum is dark red or purplish in color, its lustre dimmed or possibly over a large portion almost entirely lacking, when scattered over its surface are patches of coagulated fibrin and its fluid contents are increased in quantity and distinctly purulent in character, free drainage is imperative. There is a vast difference in significance between an injected clean peritoneum and, one which is dark and lustreless. Between turbid or milky peritoneal fluid and that which is thick or purulent and yet from very similar causes and in cases with almost parallel histories we may find such extremes in the appearance of the peritoneum.

I have seen two cases of rupture of gall bladder into the general peritoneal cavity. In both of these rupture occurred about eighteen hours before operation and the patients presented practically the same clinical pictures, elevated pulse and temperature, abdominal distention, pain and vomiting with little in the physical signs to distinguish one from the other yet in the one case the peritoneum though filled with bile was not much altered in general appearance and was closed without drainage while in the other case it presented all the evidences of advanced peritonitis described above and called for the most extensive drainage possible.

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COMPLETENESS OF OPERATION.

If an operation conducted for the relief of conditions which predispose to peritoneal infection is a complete one, removing all of the infected and grossly diseased tissue and thoroughly shutting off the source of further infection, drainage may often be dispensed with providing the application of one of the two preceding principles should not demand it.

Many operations, owing to various causes among which may be mentioned the desperate condition of the patient, the nature of the pathology, etc., are more or less incomplete. We are attempting to save a life rather than to deftly execute some wonderful triumph of surgical art.

In such cases we are again confronted with the ever present question; to drain or not to drain? Take for illustration three cases of pyo-salpinx none of them unusual.

In the first instance we find the pathology largely confined to the tubes and effect their total and complete removal with no soiling of surrounding tissues and leave behind a clean and healthy field requiring no drainage although the tubes themselves were badly infected and filled with pus.

In the second case we find in addition to the pathology within the tubes involvment of surrounding tissues by firm adhesions scattered through which may be small areas of tissue necrosis. At one point to avoid injury to intestine we leave attached to the gut wall a small portion of the tube. The separation of firm adhesions and bruising of tissues result in more or less uncontrollable oozing of blood and often in such cases the tube is ruptured during the manipulation with escape of its contents into the pelvis. Here is a case demanding drainage which is best instituted by carrying large gauze drains from the infected area down through the cul-de-sac into the vagina. These at the same time in addition to providing free drainage will serve to isolate the dangerous area from the rest of the peritoneal cavity. I know that under the teachings of the past few years many such cases are being closed without drainage and the best evidence that this is carrying the idea too far is found in the fact, that in many of them drainage has later to be employed.

In the third case we find a large pelvic abscess. Here of course drainage is the treatment most indicated and usually the preliminary operation at least should consist of little else than its free establishment.

In such cases tubular vaginal drainage will usually be found most satisfactory and in this and the preceding class drainage should be facilitated and the confining of the infection to the pelvis made more likely by using the elevated position of the head and trunk.

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It is not my purpose to attempt to formulate hard and fast rules governing abdominal drainage. But we must be governed by general principles which are more or less applicable to the various cases and which when properly applied are of the greatest assistance in the work. It is not possible in the time at my disposal to separately consider the many intra-abdominal conditions which may call for drainage but I desire to refer briefly to a few of them for better illustration of the above mentioned principles. In appendicitis with a small pus collection about the appendix, not the large circumscribed abscess which would of course be drained but it may be only a few drops of pus. I believe drainage should be instituted. I do not consider it to be good surgery to think that we can permanently cleanse such a field with hydrogen peroxide or any other method and tightly seal the wound. The infection escaping from the appendix is of so violent a character and extends with such rapidity, that, in such cases external drainage is of the highest importance. I have known more than one instance of this kind where failure to provide drainage resulted disastrously.

Again in such cases we may secure in addition to the drainage the isolation of the infected area from the general peritoneal cavity by properly placed gauze strips. These gauze strips may be retained in the desired position by one or more small catgut sutures which will absorb before the gauze should be removed. If the adhesions are firm and sequestration of the area is not indicated drainage may be secured by a rubber tube or the cigarette drain.

Position in such cases is of great assistance. The head of the bed should be elevated at least two feet and the patient turned well over toward the right side and supported in this position by pillows.

Every case of diffuse septic peritonitis, whatever its origin, should be drained. Owing to the fact that the upper area of the peritoneum has much greater absorbant power than the lower the first indication is to favor the progress of the septic material into the lower and less susceptible area. This is best accomplished by raising the head of the bed from two to three feet and at the same time allow the patient to assume more or less of a sitting posture. From the lower pelvis well placed drains will carry the septic fluids off much more rapidly than the lymphatics will absorb them. In these cases the cul-de-sac will be found more or less full of septic fluid ranging from pus to cloudy serum showing that this is the point to drain.

I do not think it practicable in diffuse septic peritonitis to attempt to drain the various regions of the peritoneal cavity by multiple gauze or tube drains. Adhesions rapidly form about such objects and shut them off from the larger areas. The

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elevation of the head and trunk will through gravity determine the flow of septic fluids into the lower pelvis where the tubes are least likely to be shut off by adhering intestinal coils and omentum. In the female by far the more advantageous drainage may be secured by freely opening the cul-de-sac and draining into the vagina using a large rubber tube or gauze. It has been suggested that similar drainage could be employed in men by dissecting through the peritoneum into the lower pelvis and it has been done a few times. These patients are usually in such a poor condition that the time necessary for such dissection may not be safely taken and we have to rely upon uphill drainage. This is best secured with tubes carried through a stab wound on either side low in the groin into the most dependent area of the peritoneal cavity. Drainage through tubes so placed will be very profuse.

Inflammatory and suppurative processes of the pancreas always require free drainage which if pus is present is most efficiently made posteriorly at the costo-vertebral angle. I recently operated upon a case of subacute pancreatitis with an enormously enlarged pancreas in the center of which was a large cavity containing pus and broken down pancreatic tissue. Owing to the desperate condition of the patient and the difficulty of securing a good exposure of the field of operation it was decided better to make no attempt to place a posterior drain. This made necessary the safe conduct of the septic material through the as yet uninfected and highly susceptible upper peritoneal area. This was successfully accomplished by carrying wide strips of gauze down to the gastro-colic omentum and fastening them with catgut sutures at this point forming a circular well of gauze leading to the abdominal wall. Through this well of protecting gauze tube and gauze drainage of the pancreas to the surface was made with the happiest result.

This case well illustrates the possibilities of sequestration drainage that is the protection of the uninfected peritoneal areas from contamination by the septic discharges for which we are striving to furnish a free external outlet and it is a most valuable and frequently called for combination of protection and drainage.

In closing I desire to refer to the following points:

1. In attempting to decide for or against drainage do not blindly follow the dictum of any man as laid down for cases of the same general character but be governed by conditions found in that individual case.

2. Having established drainage remove it as soon as possible. Many cases carry drainage much longer than necessary.

3. The great value of the elevated head and trunk posture for drainage of the lower abdomen.

4. The value of drainage through the vagina in widespread and pelvic peritoneal infections.

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OPERATIVE TECHNIQUE IN STONE OF THE URETER

J. P. CRAWFORD, DAVENPORT, IOWA.

Recent surgery of the ureters has done much to give us a more correct knowledge of the anatomy and physiology of these organs. The ureter extends from the twelfth rib to the floor of the pelvis, corresponding in its general course to a perpendicular line from the inner third of the Poupart's ligament to the twelfth rib. The ureter is extraperitoneal lying just behind the posterior peritoneum in a sheath of loose areolar tissue supported by a muscular bed made up of the psoas—major and minor, pyriformis obturator and levater ani muscles, also passing anterior to the iliac artery, all of which are said to increase the peristaltic activity of the urinary tract, by their contraction and dilatation. The ureter is considerably longer than the distance between the kidneys and bladder, lying loosely as it does in the connective tissue, it admits of extensive mobility to the extent even of allowing it to be drawn out through an abdominal wound in surgical procedures without harm. The ureter, as just stated, is not a straight canal of uniform caliber leading from the kidney to the bladder but consists of three dilatations, (reservoirs or spindles), three constrictions (sphincter or isthmuses) and three flexures or curves, which have an important relation to the pathology and surgery of these organs.

In the anatomical arrangement of the ureter, the calices are like so many pouches attached to the pyramids at the level of the renal substance, converging as they carry the secretion into one common pouch or dilatation, known as the urethral pelvis or reservoir. Next comes a decided constriction called the proximal isthmus or sphincter. Then the lumbar spindle or reservoir, taking its name from its location. The second constricture or sphincter is at the crossing of the iliac artery, known as the middle isthmus, while in the third or last division we have the pelvic reservoir or expansion which narrows into a neck as it passes obliquely through the bladder wall, known as the distal isthmus or vesical sphincter. Aside from these marked constrictions in the caliber of the urethral tract, there are also three decided deviations in the form of flexures. The first comes at the distal kidney pole as it bends toward the spinal

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column, the flexure is at the crossing of the large iliac artery, and the third and last where the ureter follows the curve of the pelvis.

From the foregoing we are to understand that the dilatation or reservoirs of the ureter are the result of the constrictions and that the flexures, such as the crossing of the iliac artery and the sharp turn in passing though the bladder, produce the constrictions, or isthmuses, and these in turn obstruct and detain calculi.

The accepted belief, at present, is that the urethral tract is not merely an irregular canal, as just described, dependent upon the force of gravity as well as pressure from behind but that the ureter is an organ endowed with peristaltic activity like many other organs and viscera of the body. One of the latest authorities, especially from the standpoint of surgical research, says that "the ureter is not a passive organ but that the urine is transported from the kidney to the bladder by rhythm or peristalsis and not by attitude or force of gravity. It is an active rythmical viscus, dilating and contracting like the heart or lungs. Its complete single rhythm, that is dilatation and contraction, extending from the calices to the bladder, occupies about five minutes—and that the ureter fills and empties its contents by rhythmical wave, regardless of attitude or position of the body."

In observing the interior of the bladder with a reflected light through a suprapubic opening, I have seen this intermittent gushing from the mouth of the ureter as if by peristaltic action at regular intervals.

The irregular caliber or constrictions of the ureter and its peristaltic force has much to do in determining the passage or detention of calculi in their transit from the kidney to the bladder, both in the normal as well as the pathologic ureter.

The diameter of the healthy uterus is said to be one-seventh of an inch at the proximal isthmus, one-tenth at the vesical sphincter, while at the middle constriction, where it crosses the iliac artery, it is one-fourth of an inch, the largest of any, which no doubt accounts for the rarer detention of calculi at this point. We can readily understand that a diseased condition of the ureter, such as inflammation or ulceration, where the peristaltic function is lowered thereby favoring residual exudates, that the presence of calculus obstruction is augmented in this way, as well as by mechanical kinks.

The following interesting case will illustrate the behavior of a calculus in the lower segment of the ureter, having run the blockade of all the sphincters except the distal isthmus, there to

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remain for years, gradually increasing to great size without apparent obstruction of the urethral stream or impairing the function of either kidney or ureter.

Mr. F. C., age 34, about seven years ago felt a strange faint-like sensation in his abdomen which he supposed to be in his bowels, lasting for three days. This experience was followed with bloody urine for perhaps thirty days, bladder became irritable and he passed sediment constantly. Patient, in addition to internal treatment, soon began local flushing which was continued the greater part of the time until operated upon last year.

His history shows that throughout this period of about six years he was never free from more or less straining and tenesmus of the bladder and rectum when voiding as well as sediment in the urine which constantly suggested the presence of vesical-stone. He had been sounded by some of the best experts in Kansas City and Chicago with negative results. Before I operated upon this patient I had the assistance of an X-ray skyograph which showed clearly the presence of a stone in the region of the bladder, although the most careful sounding could not elicit its presence, which suggested that the calculus was either encysted in the bladder or ensconced in the ureter just behind the bladder. I made a free supra-pubic opening into the bladder and found this viscus absolutely free of any foreign body. On having an assistant elevate the floor of the bladder, through the rectum I found the left ureter very slightly patulus and by insinuating the point of my finger through the meatus, I recognized a stone of very large size for that location.

The technique employed in the extraction of this stone I think is unique and suggests a new approach to, and practical method of invading the distal extremity of the ureter for the release of calculi, not hitherto described.

I did not dilate the somewhat patulous meatus by forcible instrumentation, but with the point of the index finger introduced, I pushed, pulled and teased the tissues constantly, requiring nearly an hour, until there was sufficient dilatation of the ureter to deliver a stone about 1 3-8 inches in diameter without lacerating the bladder wall. In this case, continued drainage was deemed necessary on account of the residual exudates with the thick and contracted viscus which retarded the supra-pubic closure, even to the extent now of a few drops of moisture occasionally, no doubt to disappear entirely soon. The patient is now an active business man and is able to go several hours and sometimes through the night without voiding.

If a calculus passes by the first constriction or proximal isthmus of the ureter it is most likely to be transported into

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the lower segment next to the bladder wall, if it is detained at all before emptying into that viscus, as the middle isthmus is the largest of all the constrictions, although I have in mind a case where we removed a fair sized stone, detained at the middle neck.

The usual method of removing calculi from the lower segment of the ureter is by a lateral incision in the abdomen and dissecting down behind the peritoneum thereby reaching the ureteral obstructions by an extra peritoneal route. But with the method employed in the above case, the X-ray having positively established the presence of stone in the bladder area with negative searching, we can proceed with a generous suprapubic opening examine this viscus first and if desirable directly probe and explore through the meatus and dilate into the terminal spindle of the ureter. It cannot be determined beforehand in cases like this just how far one will have to go, for you cannot differentiate in the skyograph between a stone hid in the bladder folds and one in the ureter just behind the bladder, on account of the distance antero—posternally being uncertain in a skyograph. Where it is necessary to dilate the vesical sphincter at first some difficulty will be met with on account of the depth. This manoeuver is greatly facilitated, however, by an assistant pressing up the floor of the bladder with two fingers forced high up in the rectum.

It is understood, of course, that this whole procedure is based upon an X-ray skyograph, confirming the presence of stone in the lower pelvic area, in addition to the physical signs. The X-ray in the hands of experts is of such accuracy at the present day and value as a diagnostic measure in these particular cases, that we are not justified in proceeding blindly in search of a stone, the location of which may be positively demonstrated by the use of this agency.

It should be borne in mind, however, that in the use of the X-ray in all pelvic work, an important pre-requisite is the complete emptying of the intestinal canal, the same as for an operation, as the bowel debris is of sufficient density, on account of the earthy material, as to interfere with the otherwise more clearly defined shadows in the skyograph.

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WHAT IS THE SIGNIFICANCE OF ACUTE JAUNDICE FOLLOWING SURGICAL OPERATIONS

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By acute jaundice, I refer to that form which occurs early after operations, it must not be confounded with the mild icterus which occurs later, in cases of general sepsis.

This paper is inquisitorial, rather than dogmatic, and is presented with the view of stimulating further research upon this rather rare and interesting subject.

Having had three cases of post-operative jaundice, in my practice, the query arose as to the pathological connection.

Case 1. Young man, butcher, of good family and personal history and habits. Appendicaecal abscess, no attempt was made to remove appendix, gauze drainage. Intense jaundice set in on the third day, coma and death on the sixth.

Case 2. Child, aged 4, good family and personal history. She had an attack of acute appendicitis which was treated medicinally, acute symptoms gradually subsided and she was thought to be on the road to recovery, a recurrence took place six weeks after original attack. Operation revealed abscess, gauze drainage without attempt to remove appendix; marked jaundice developed on the third day, convulsions, coma and death on the fifth.

Case 3. Woman, age 25, family and personal history good. Pelvic distress and inflammatory symptoms dating from acute attack some four weeks previously; post-uterine pelvic tumor; operation per vaginum, tumor a haematocele from tubal pregnancy; intense jaundice developed the third day, hypodermoclysis of saline solution freely used. Coma and death the sixth day. In this case there was no odor, or pyogenic infection.

These cases were all seen in consultation, and at a distance from my home, and the care and subsequent treatment was not under my supervision, consequently, exact clinical data are wanting. In none of these cases, was there diffused peritonitis, neither were there any symptoms of hepatic involvement noted, except the jaundice. Chloroform was the anesthetic used in each case. Jaundice has been termed "A complex symptom" the etiology of which has occasioned much theorizing. Murch-

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ison's classification of non-obstructive jaundice as being either haematogenous, or hepatogenous, does not seem to meet with much favor among recent investigators of hepatic pathology. "Without the liver, there can be no jaundice" is the argument advanced by some writers, and others favor the proposition, that all cases are essentially obstructive, no matter from what source the original cause emanated, yet "In cases wherein intense jaundice has been present, the liver seems to be entirely healthy." (Bristowe).

This, probably is a superficial view, and while a macroscopical examination fails to show any obstruction to the bile passages, a minute and close examination, "will, in most, if not in all cases, reveal that the bile radicals around the hepatic lobules are obstructed to a greater or less extent by swollen epithelium, pigment granules and crystals of tyrosin and leucin. The cause acts on the liver substance in a general way, and must, therefore, be toxic, and conveyed to it by the blood, either of the general, or the portal circulation." (McPhedran).

"There are cases of obstructive jaundice, in which the occlusion occurs within the biliary lobules, and is due to swelling of the epithelial cells. The swelling and degeneration of the hepatic cells, is the result of the action of toxic substances, introduced through the circulation." (Porter).

William Hunter (Allbutt's System of Med.) designates the two groups of jaundice as obstructive, including all those cases where there is palpable obstruction, and toxaemic, those occurring in connection with some general infection. Of toxaemic jaundice, he makes three groups, viz, 1. Jaundice due to poisons, as toluylendiamin, phosphorus, arsenuiretted hydrogen and snake venom. 2. That occurring in specific fevers, as yellow fever, malaria, pyaemia, enteric, typhus and scarlet fever. 3. That occurring in obscure infectious conditions, as in epidemic, infectious febrile, or malignant jaundice, icterus gravis, Weils disease, and acute yellow atrophy of the liver.

"All cases (of toxaemic jaundice) usually show destructive changes in the blood, alterations in the quantity and quality of the bile and changes in the liver cells and bile ducts, varying in degree, according to the irritant power of the toxin." (McPhedran).

Weils disease is said to be caused by disorders of the respiratory tract, especially influenza, (Meinert), and occurs in epidemics; both kidneys and spleen are liable to be involved in this affection.

Many pathologists are inclined to attribute all these affections to some form of toxaemia, and from the multitude of conditions under which they arise, it is highly improbable that any

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specific toxin is responsible for the cause, nor is any peculiar, or particular bacteria, necessarily a factor in the case. The toxin may be introduced, as in case of poisoning, or the specific fevers and contagious diseases, or it may arise from auto-intoxication. "Auto-intoxication does not necessarily depend upon bacterial infection; the biliary acids, in fact, all the excrementitious products, which arise from insufficient liver activity, are capable of producing forms of intoxication, which may terminate fatally." (Roswell Park).

In investigating this subject, I receive but little enlightenment from our text books of surgery, from which we would be led to infer, that as a post-operative complication, this affection is very rare; personal inquiry of a few of our leading surgeons, however, leads me to believe that it is of occasional occurrence.

W. W. Keen of Philadelphia, writes me, "Acute jaundice after surgical operation is not common. I do not think that I have ever seen a death from this cause after operation."

Howard A. Kelly of Baltimore, writes, "I have never had a case of acute jaundice following surgical operations, although knowing of some due to appendicitis."

A. J. Ochsner of Chicago, writes, "I have had a few cases, but each time they occurred in patients, in whom I had manipulated the gall bladder during the operation, or in which the operation was in the region of the appendix, which is closely connected with the liver, and I had considered them as cases due to acute cholaemia. It has been described as acute yellow atrophy, due either to the chloroform, or to the traumatism of the peritoneum."

John B. Deaver of Philadelphia, writes, "I have only seen jaundice follow in one case of appendicitis, and in one operation for gall stones. (Operation confined to gall bladder). In both cases, patients recovered shortly."

Theo. A. McGrew of Detroit, writes, "In the civil war, I used to see many such cases after secondary operations; the patients would become rapidly jaundiced and would soon die."

Dr. H. Gideon Wells, of the Department of Pathology and Bacteriology, University of Chicago, writes, "Icterus following operations is occasionally observed. Particularly when chloroform has been used, and it is attributed by many to the action of the anesthetic upon the liver; occasionally the clinical picture has resembled acute yellow atrophy, and I have personally studied, one such case from the practice of Dr. Bayard Holmes, which he has reported."

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A brief abstract of the case referred to is as follows, taken from the report furnished me by Dr. Holmes:

"Trained nurse, aged 23. Operation for appendicitis; appendix bound in retrocaecal fossa, by old inflammatory adhesions. (No pus). Moderate jaundice. No symptoms of peritonitis, death at the end of third day. Peritoneal cavity found at autopsy, to be sterile."

Dr. Holmes also reports another case. Office girl aged 26; operation for appendicitis; appendix free; moderate jaundice and death in six days. No autopsy." Dr. Holmes says, "The patient went through a course of symptoms, ending very shortly in death, and comparable only to acute yellow atrophy. Whether this degenerative process was already established, or whether it was the result of chloroform anesthesia, I am wholly at a loss to decide."

Inquiry of the Johns Hopkins Hospital, Baltimore, elicits the following from Dr. J. C. Meyers: "The complication must be a very rare one, I recollect it as observed in only a very few cases, as I remember, after operation for appendicitis. The jaundice was slight, or of short duration, and the patient recovered. I have just gone over all of our cases of appendicitis, and these are the only post-operative jaundice that we obtain. In the literature of the last three years, under the heading, post-operative complications, Abdomen, I find no reference to jaundice."

Dr. Max Ballin of Detroit (Annals of Surg. Mar. 1903), reports a case following appendectomy, wherein icterus set in in two days; patient had been subject to slight attacks of lead colic, otherwise healthy and of good family. There was coma, delirium, fever, haematemesis, with albumin, casts, tyrosin and leucin in the urine. Venesection and transfusion of saline solution was used and the patient recovered.

He finds record of nine other cases, none American, all were abdominal operations, except one, the extraction of fourteen teeth from a suppurating and necrosed jaw. Chloroform was the anesthetic used in six cases, Billroths mixture of choloform in one, and in two, the kind of anesthetic was not stated. Ballin used chloroform in his own case. As predisposing causes, alcohol is given in three cases, indigestion twice, slight catarrhal jaundice once, and lead in his own case. He calls his case, "Acute yellow atrophy." As the patient recovered, the diagnosis was based wholly upon symptoms, which were undoubtedly, typical.

Anders has recently studied a number of cases of acute jaundice arising from various causes. (Am. Jour. Med. Sci. Apr., 1903). One only was a surgical case, an operation for

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pyosalpinx; jaundice set in on the eighth day, with slight enlargement and tenderness of the liver; the jaundice began to disappear four days later, and the patient slowly recovered. His observations of intense jaundice in lobar pneumonia, peri hepatitis, and hepatic cirrhosis, lead him to suggest, that a polycholia may exist, due to conversion of haemoglobin that is suddenly liberated by certain poisons, into bile pigment. Whether acute yellow atrophy is a constant accompaniment of this symptom, following surgical operations, future necropsies and observations must determine. Even if this should be established to be the case, it will give us no enlightenment as to the surgical relation, as the etiology of even non-surgical acute yellow atrophy, is but little understood. The query is, what is the factor, or combination of factors, producing this condition? Is it confined to abdominal surgery only?

So far as my observation has extended, and from all I have been able to learn, abdominal cases, very largely predominate. This may possibly give us a clew to the etiology. Disturbance of the peritoneum and interference with the portal circulation, will at least in part, account for hepatic derangement. We regard the peritoneum as an enormous lymph sac, capable of rapidly absorbing fluids that find their way therein; it is easily seen how the liver may be overwhelmed by the profuse absorption of unusual, or toxic material, the hepatic cells, being unable to discharge by their afferent ducts the secretion, the circulation takes it up and diffuses it through the system, instead of eliminating it through the proper channels. Experiments also tend to show that the lymphatics of the liver, play an important part, in absorbing the bile, and throwing it into the circulation by the way of the thoracic duct. But lymphatic absorption from the peritoneum, alone, can scarcely account for the hepatic disturbance, for the abdominal lymphatics discharge into the thoracic duct, and thence into the general circulation. We regard the blood in the hepatic artery as destined for the nourishment of the liver, and it is through this channel that the general circulation reaches it, while the supply of material for the great hepatic laboratory is conducted through the portal vein; it is to the portal system, therefore, that we must look for a solution of this problem if the abdomen, or its contained viscera, is the origin of the disturbance.

Is this condition due to pyaemic infection?

But few individuals,at some period of their lives, escape pyogenic infection in shape of boils, or abscesses, of greater or less severity; even multiple hepatic abscesses occasionally occur, from dysentery and other abdominal diseases, and the rarity in

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which jaundice is an accompaniment, warrants us in excluding pyogenic bacteria, or their toxins, from being, either predisposing or exciting causes.

Is it due to general sepsis?

If so, general surgery should show a large proportion of cases, while the contrary appears to be the case. It is true, that jaundice, not infrequently appears in general sepsis, both surgical, and non-surgical, but it is neither early, nor acute, but appears rather, as one of the various phenomena accompanying systematic infection, and is considered as being the result from general toxaemia.

Is it due to the anesthetic, particularly, to chloroform?

Nicholas Senn, writes me, "I have had quite a number of slight cases of jaundice after chloroform, none after ether."

Bayard Holmes, in the cases already referred to, intimates that chloroform might be the cause, as does also Ochsner and Wells.

W. W. Keen writes me, "I should be disposed to attribute it to an infection, or to the deleterious effects of the anesthetic."

Bandler, Bastianelli, Martin, and Cohn, consider the chloroform used in the anesthesia, to be the cause. (Ballin).

"The experiments of Nothnägel (and others) upon animals, show beyond doubt, that chloroform causes degenerative changes of the liver cells, analogous to changes in kidneys and heart muscle. Bandler repeated the same experiments and compared them with findings after ether inhalations; chloroform always gave said degenerative changes, ether never." (Ballin).

Ballin concludes, from his study of the ten cases referred to, that while inflammatory conditions, suppuration, alcoholism, lead poisoning, and handling the intestines and peritoneum, were predisposing factors, that chloroform exerted a toxic influence upon the liver in producing acute yellow atrophy. On the other hand, Anders, in recent experiments upon animals under ether, shows a reduction of haemoglobin, and he states, "That, blood destruction occurs during the anesthetic state, has been absolutely proven." He quotes DaCosta, and Kalteyer, as concluding, "That invariably, etherization produces increased haemolysis, following which, the rapidly regenerated cells are imperfectly supplied with haemoglobin." Anders further states, "It seems to me, that the suddenness with which a rather extensive blood destruction takes place, during etherization, accounts in a satisfactory manner for the occasional occurrence of polycholia, since there occurs an equally rapid liberation of haemoglobin, which if acted upon by the hepatic cells, must result in an increased amount of pigment. Of course, a mixed etiology may obtain, in some cases." Anders's experiments seem to be directed to

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the effect of ether upon the haemoglobin and the resulting transformation into bile pigment. Those of Nothnägel, of chloroform upon the hepatic cells. Each anesthetic, may possibly be inciting factors, when certain other conditions are present. From the deductions of these experiments, we must unhesitatingly conclude that ether is the safer of the two anesthetics.

From the predominance of abdominal cases, interference with the peritoneum, and disturbance of the portal circulation, may be one of those necessary conditions, favoring post operative jaundice. McGraw suggests, "In some cases, there may have been thrombosis of the portal vein."

Doubtless, as Anders suggests, "A mixed etiology may prevail."

In conclusion, we suggest, that post operative jaundice, signifies hepatic disturbance, the clinical picture of which, resembles acute yellow atrophy, and is of the gravest import.

That neither bacterial, nor pyaemic infection is necessarily a specific cause of this sequel, but probably a mixed etiology prevails, in which disturbance of the peritoneum and portal circulation, and possibly the anesthetic are important inciting factors.

Discussion on the Paper of Dr. King

T. C. Davis, Des Moines.—This is an exceedingly rare condition, also a very interesting one. I have seen one case which occurred in a young man who had been upon a prolonged debauch lasting six days and that, therefore, might be a factor in it. In this case it was appendical abscess; we also gave chloroform. These three factors are in the case. The condition at issue occurred on the second day. The man died on the third. There was, of course, a suppression of urine and marked jaundice was also present. We have had so few cases and there have been so few autopsies that the exact pathological conditions we do not know, but from the experimental work brought out by the essayist he has found that there are pathological changes, not very marked, but great enough to explain this condition. It seems to me, though, that chloroform is the important factor. It is a condition very similar to phosphorous poisoning. I think the concensus of opinion from the facts obtained in the German Hospitals where chloroform is used almost altogether shows they have more cases of this condition than any other place. As the writer brought out, there are nine cases reported from European clinics and none from the American clinics. In Europe they use chloroform much more than they do here.

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G. E. DECKER.—I want to make mention of the fact that in the last illness of Dr. Harriman, after an operation for appendicitis there was more or less jaundice present. I am sorry that I cannot find an Iowa City man here to tell you more about that case, but it was an operation for appendicitis with jaundice afterwards and peculiar green stools. The cause of it they did not find and there was a fatal outcome.

E. H. KING.—If chloroform is the exciting factor why do we not have more cases of jaundice following the administration of chloroform in non-surgical cases. I believe in the abdominal cases that there must be some inference that it is the portal circulation that makes the predisposing cause, if chloroform is the exciting factor.

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CONVERGENT STRABISMUS OR SQUINT AND THE MODERN METHOD OF TREATING IT

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One of the chief obstacles that the ophthalmic surgeon meets with in successful handling of convergent strabismus are the objections raised by the parents in submitting a young child to any treatment necessary for the relief of this condition. It is not alone on the part of the parents that any child is allowed to grow up with an ever increasing squint which should have been cured if taken at the start, but some blame for this state of affairs must be laid at the door of the general practitioner to whom the child is first brought for consultation. He is the one who in many instances gives the first advice as to the handling of the case; to wait until the child gets older—until it is time for him to go to school—when if the eyes do not straighten themselves an operation can be done that will cure the deformity. In the large majority of cases the visual acuity of the eye that squints is defective at birth and the brain receiving an indistinct and blurred image in its endeavor to use both eyes together and get binocular single vision suppresses the image in the squinting eye. The defective eye thus left to its own resources, has a tendency to deviate from the primary position. From this fact alone one can see the necessity of beginning treatment in the first stages if a successful issue be desired. It is during the developmental stage of the visual apparatus that much good can be accomplished in remedying the defect and getting parallelism of the visual axes, and it is during this period that a large proportion of the cases can be cured without the necessity of submitting to operative procedures. It is important that this fact should be impressed not only upon the parent but upon the medical profession in general. The consideration of some of the etiological factors that are in large measure responsible for its production will be an aid to us in understanding the necessity that arises for the early undertaking of the treatment of convergent squint.

For the perfect working of the visual apparatus it is necessary that the impression of the object looked at and conveyed

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along the optic nerve of each eye to the visual centers should be blended and perceived as a single picture; in other words the brain insists that the eyes shall work together and binocular vision result. If anything interferes with this state of affairs fusion of the impressions does not take place and a tendency to diplopia exists and consequently indistinct and blurred vision. To overcome this mandate goes forth to suppress the vision in one or the other eye. This is done by sacrificing binocular vision and squint is the result. While a number of theories, more or less hinging on one another, have been advanced as being responsible for squint no single one is universally conceded as being correct, although they all contain an element of truth, which in a large measure acts as a predisposing cause.

Binocular single vision is an acquired condiiton to be learned by the child just as he learns to walk, or how to grasp things in his hand, etc. At birth the child is not able to use his eyes harmoniously, objects are seen dimly at first on account of the development of the visual act being incomplete but as the time goes on nature asserts itself and unconscious efforts are made to use the eyes simultaneously in observing objects that attract his attention. The older he gets the faculty of fusion more and more asserts itself and binocular single vision eventually becomes assured.

The treatment of convergent depends upon several factors:

1st. The beginning of the treatment in its earliest stage.

2nd. The restoration of binocular vision.

3rd. The improvement of the visual acuity in one or both eyes and correction of the hypermetropia thereby relieving the accommodation and reducing the excess of convergence.

4th. The development of the power of fusion.

5th. The establishment of binocular single vision.

The accomplishment of these can best be obtained by means of the following:

1st. The correction of errors of refraction and improvement of vision.

2nd. The education of binocular single vision.

3rd. Operative measure.

The majority of infants at birth are hypermetropic and require an extra effort of accommodation to see distinctly, especially when they begin to play with near objects and owing to intimate association of that function with convergence the latter is unduly stimulated and binocular vision can only be kept up by an undue effort of the will. It is during this period and also later when the child takes up kindergarten or school work that the parents' attention is first drawn to the fact that the child turns in one or the other eye it may be only occasionally and

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when looking at near objects. As time goes on the squint comes on more frequently, the child learns to suppress the vision of that eye until frequently the squint becomes permanent. The vision in that eye becomes still more impaired from non-use and may unless treatment is promptly instituted become amblyopic. It is during the first five years of the child's life that the brain is learning to fuse images and get binocular single vision. Much can be accomplished if appropriate treatment is begun during this period. An endeavor should be made to find out approximately the visual acuity in each eye. If the child is old enough and knows his letters the ordinary Snellen test type can be used. If he is illiterate the vision can only be guessed at. Claude Worth has devised a method for testing the vision of very young children in which he uses five ivory balls varying in size from half an inch to one and a half inches in diameter. Each eye separately is covered by a pad and the balls one at a time thrown on the floor to a distance of twenty feet; if he is able to run to and pick up the smallest one without hesitation his vision is probably normal in each eye. But at the most this can only be guessed at. The value of which in testing vision so young is doubtful, as slight variations in the vision existing between the two eyes, is a matter of importance when dealing with a squint and can only be arrived approximately. The state of the refraction should carefully be determined, first paralysing the accommodation by means of atropia sulphate and finding the amount of the error by repeated painstaking skiascopy and verifying with the test lenses when possible, and the visual acuity improved with convex glasses to be worn constantly if hypermetropia is present. It might be said that the child is too young to wear glasses, some wearing them earlier than the second year. They usually take kindly to them at that age especially when the refractive error is of considerable amount. The objection on the part of the public to very young children wearing glasses is purely sentimental. If the child could describe his sensations both before and wearing glasses he would not be backward in impressing upon the public the fact that glasses not only give him better and clearer vision but make his eyes feel more comfortable. They feel the relief they get. In the ordinary variety of squint where the visual defect especially in the squinting eye is capable of improvement and where the deviation has not been of long standing such treatment will in many cases be sufficient. But as it is exceptional to have these cases placed under our care at such an early stage other measures in addition to the optical correction alone must be carried out. The deviating eye must be trained to perform its normal requirements and as has been mentioned the vision in that eye

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is much more defective than in the fixing eye in a large percentage of cases, its visual acuity must be exercised and improved to such an extent that there is a possibility in its working in unison with its fellow. This can only be brought about by making it perform the functions of vision independently of the other eye. This can be accomplished by lowering or occluding the vision in the fixing eye, paralysing the accommodation by means of a cycloplegic in the former or a pad applied over that eye in the latter instance. This will require an effort to be made to use the squinting eye especially when looking at objects near at hand as only in that eye is it possible to use the accommodative power and get clear and distance vision. The cycloplegic can be employed when vision is about equal in the two eyes but the lowering of vision by this means is not sufficient if the deviating eye is highly amblyopic in which case the vision in the fixing eye would not be lowered enough to cause the patient to use the defective one. Here our only hope of improving the visual acuity of the latter lies in the pad. This should be kept up almost continuously for weeks or even months at a time before such improvement can be looked for. Where the central vision is markedly affected and the power of fixation is lost very little improvement can be expected from any method of treatment outside of surgical measures employed for cosmetic purposes. After all this has been accomplished and when the visual axes are apparently parallel our labors have only just begun. From a cosmetic standpoint the result may be perfect but the eyes refuse to work in harmony with one another, the patient does not get binocular vision. Our aim must be directed to the establishment of this function with as little delay as possible. The faculty of binocular fusion begins about the second year of life and attains its highest developments between the fifth and sixth year. It is during this period, where squint exists, by proper exercises the brain centers are capable of being stimulated and first simultaneous vision and eventually stereoscopic or the highest degree of binocular vision may be developed. If such treatment is neglected beyond this period the power of fusion is lost except in rare instances. This fact is important to bear in mind as it shows the necessity of beginning such exercises early and during the period of the development of this faculty.

We exercise the binocular vision by means of the stereoscope. Of the various forms of this instrument the amblyoscope of Worth is probably the most practical and from the use of which the most satisfactory results can be obtained.. This instrument consists of two tubes joined by a hinge. Each tube is bent at an angle of 120 degrees. On the inside of this angle is inserted

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an oval mirror and at the distal extremity of each tube are the object slide carriers, while at the near end is a convex glass of 5 inch focal length. The tubes can be brought together to suit a convergence of the visual axes up to 60 degrees or separated to suit a convergence of as much as 30 degrees. A series of pictures are placed in the object carriers. The first of which bird and cage, rat and trap, etc., being different in character exercise simultaneous vision but do not require fusion of the images. The second variety are pictures of a similar character with portions missing from each slide but that which is absent on one is present on the other side. Here fusion of the images must take place to get a complete picture thereby exercising binocular vision. The third variety consists of pictures which not only require fusion of the images but give stereoscopic vision.

In using the amblyoscope two lights are placed about two or three feet in front of and on a line with each tube. Pictures of the first series are placed on the instrument and an endeavor made to have the child see each picture before the corresponding eye. If only one is seen the distance of the lights is so varied by approximating that in front of the squinting eye in which the image is suppressed and removing the light before the fixing eye to a greater distance until the illumination is such that both images are seen simultaneously. The second and third series are placed in the instrument and a similar procedure carried out and an attempt made to fuse the pictures. The position of the distance of the lights in the meantime is varied until they are of equal distance from the instrument and the two objects can still be seen distinctly. The child is taught to converge and diverge the tubes at the same time endeavoring to keep the pictures blended. After a little exercise of this sort it will be found in favorable cases that it is possible to vary the angle of the instrument to a considerable extent and still maintain fusion and binocular single vision is assured. Such treatment should be directly under the supervision of the surgeon and performed three or four times a week while similar exercises can be carried out at home three or four times a day by means of a good stereoscope using any one of the various series of cards that can be obtained for this purpose.

As success depends upon this educative treatment being begun before the desire for binocular vision is lost these lessons must be started early—as it is probably true what Worth says that it is only in exceptional cases that the fusion faculty can be trained after the child has reached six years of age and even under the most favorable circumstances cases are met with in which, although the eyes are straight no progress is made be-

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yond the first stage, there being present an antipathy to binocular single vision.

Such treatment begun in the first stages and carried out faithfully will in a great number of cases result in a complete cure of the squint but if the cosmetic or visual results are not satisfactory or if unhappily the attention of the ophthalmic surgeon has not been called early enough to the defect, operative procedures are indicated. If the deviation is not more than 20 degrees and this can be determined by measuring its extent with the perimeter a free tenotomy of the internal rectus or advancement of the external rectus without tenotomy of the intermus, is usually sufficient. On the other hand, where the convergence exceeds 20 degrees an advancement of the external rectus with tenotomy of the internal will probably be necessary.

Exercise with the Amblyoscope and Stereoscope should be continued, after the operation, for several months.

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CONTRIBUTION TO THE SUBJECT OF FAT HERNIA IN THE LINEA ALBA

HENRY MATTHEY, DAVENPORT, IOWA.

Attempts have repeatedly been made by surgeons who deal with hernia in the linea alba to direct the attention of the general practitioner toward this subject, in the hope that the latter might become more impressed with the importance of this field. In the preparation of this paper it was my constant desire to facilitate the recognition of these particular forms of hernia. Although our literature has been enriched by a series of publications concerning this matter, the fact remains that surgical text-books make slight, if any, mention of the subject, while works of practice have failed entirely to consider these affections, even in the differential diagnosis of gastro-intestinal diseases in which they come prominently into play. To illustrate how meagre a general knowledge of this condition exists, I cite two cases from Roth, both of which were successfully operated in Bergmann's Clinic in Berlin. The first concerns a circus-rider who during her travels through the principal cities of Europe sought in vain for advice and cure among a large number of physicians. The second case was an officer of the army who possessed an entire portfolio of certificates and written opinions, who in the course of years had visited the majority of institutions for diseases of the stomach and who found himself painfully hampered in the exercise of his duties. Despite the characteristic symptoms of which this patient complained the nature of his illness was not discovered, and the proper significance was not attributed to his epigastric growth. This unfortunate was subjected to all the tortures of lavage on alternate days for a period of one year, and for the same length of time the epigastric region massaged daily, necessarily with extreme pain to himself. From the day on which Bergmann undertook the operation all symptoms disappeared, the despondent patient regained his spirits, and was able to pursue every branch of his occupation with comfort.

I myself have operated on a number of cases which had for years drifted from physician to physician, persistently regarded

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as stomach cases. Invariably favorable and prompt results followed the surgical removal of the hernia.

Before entering further upon my subject I desire to emphasize the necessity for more extended ability to diagnosticate these hernia by referring to a case operated upon by the lamented Dr. W. D. Middleton. If this skilled and capable man had not so tragically met an untimely end, we as an association should have been granted the pleasure of hearing a paper from his own pen on the subject of fat-hernia. The case in question was of interest chiefly by reason of the fact that two operations for uterine disease had already been undertaken, the first for the repair of a cervix laceration, the second for the correction of a retroflexion, without any beneficial influence on her extremely troublesome symptoms of nervousness, gastralgia, constipation, and digestive disorders. After a fat-hernia in the linea alba had been discovered and recognized as the cause of the existing symptoms, and removed, all her ailments vanished.

The term fat-hernia is applied to those ruptures occuring in the linea alba above or below the umbilicus or in the ordinary location of hernia, while the term hernia epigastrica is reserved to designate a hernia existing between the umbilicus and the xiphoid process, either in the middle line or in the region of the recti muscles. While the latter represents a true hernia with or without a coexisting lipoma, the former is a subserous lipoma derived from the properitoneal connective tissue which makes its way through small openings in the fibrous laminae of the linea alba, producing in the majority of instances a distinct pedicle, composed of vascular connective and adipose tissue and directly connected with the peritoneum itself. Frequently this pedicle contains a funnel-shaped peritoneal prolongation.

Fat-hernia may occur in the inguinal and femoral regions, as several of my own cases have shown. I may mention here a case of this nature with which I had the opportunity of assisting Dr. H. Braeunlich at Mercy Hospital in Davenport. An elderly woman, afflicted with hernia, was suddenly stricken with severe symptoms of strangulation, which proved unyielding to taxis under anesthesia. Operation was immediately resorted to, and the firm, pigeon-egg-sized masses in both femoral regions were found to be lipomata which had emerged through a constricted hernial ring. The pedicles of these tumors, connected to the peritoneum, had drawn down portions of the latter structure with such efficiency that the bowel itself had followed and suffered compression. Both sides presented identical conditions. A rapid, untroubled and complete recovery followed this operation.

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Regarding the etiology of fat-hernia and hernia epigastrica no more clear and extensive information exists than that elaborated and published by Oscar Witzel of Bonn from whom I quote freely.

The frequent occurrence of this form of hernia in the median line of the abdomen is not the result of chance, but is directly dependent on anatomical factors. We have learned that ventral hernias about the region of the recti muscles penetrate through minute openings which are found sometimes in the middle line, more frequently, however, slightly laterally in that mass of connective tissue which forms the linea alba abdominis.

The aponeurosis of the broad abdominal muscles, after investing both surfaces of the recti, merge into a fibrous structure, which from the umbilicus downward appears as a sagittate band. Of a width of several millimetres at the pubic symphysis its extension upward to the umbilicus is characterized by a gradual increase in its transverse dimensions, and a diminution in its thickness. From the umbilicus to the ensiform process the widening and thinning of this structure become still more marked, so that the median aponeurotic band in its entirety gains three centimetres in width and presents its flat surface forward. It is through preformed slits in this fibrous band that epigastric hernias so frequently take their course. Thompson has shown that the aponeurosis of the external oblique muscles of one side possess through the linea alba into the aponeurosis of the internal oblique of the opposite side. Since, according to Hyrtl, the fibres which cross in the linea alba are invariably placed obliquely, it follows that the linea alba itself may be properly regarded as a fibrous meshwork. While it is true that the rhomboidal meshes are dense and firm, and in but few locations permit the passage of vessels and nerves from the deeper structures, it is precisely these latter points that constitute the favorite seat of development of masses of adipose tissue in obese subjects. The growth of such fat mechanically enlarges the mesh and diminishes the resistance to intra-abdominal pressure. By these very factors a hernial orifice is readily produced.

These brief anatomical considerations satisfactorily furnish the reason not only for the lesser frequency of median hernia below the umbilicus, but also, as Richter has pointed out, for the especially large number of ruptures occurring in close proximity to the ensiform cartilage.

In the production of median ruptures four factors, as enumerated by Roth, are of causative importance:

1. Embryological nutritional disturbances resulting in a

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defective or incomplete closure of the abdominal wall at any point.

2. Congenital or hereditary weakness of the fasciae of the linea alba.

3. The growth of a subserous lipoma through the linea alba to the external surface of the abdominal wall, and the consequent funneling of the peritoneum.

4. Violence of sufficient degree to stretch and separate the fibres of the linea alba.

Acquird hernias in the median line have been observed to occur in the tenderest years of infancy. In a child predisposed to weakness of the abdominal wall, severe coughing or crying might readily suffice to produce a rent in the linea alba favorable to the subsequent extrusion of portions of the viscera.

The frequent concomitant existence of median and other varieties of hernia in the same individual would seem to argue for the importance among causative influence of a weak abdominal wall. The hereditary factor of predisposition evinces itself by the appearance of hernia in numerous members of the same family.

The many cases of hernia in subjects of excellent muscular physique find their explanation in the development of subserous lipomata which by their penetration of the abdominal wall produce a hernial aperture. This theory, originally advanced by J. Cloquet has a firm advocate and exponent in Roser. Subserous accumulations of fat are found in a variety of locations; in the pelvis, about the bladder and rectum, in the vicinity of the obturator foramen and of the femoral ring, and about the obliterated umbilical vein on the anterior abdominal wall. These fatty masses increase the mobility of the peritoneum—this is no doubt their purpose in connection with the bladder, genitals, and rectum, to facilitate, by their presence, the power of the peritoneum to adapt itself to the varying degrees of fulness of these organs. On the abdominal wall these masses probably exercise a similar function. If from any cause a defect or orifice exists in the wall of the abdomen, fatty tissue would force its way into such an opening, would emerge externally, enlarge, and drag the underlying and readily movable peritoneum behind it, the connective strands of tissue forming a pedicle. This process having once occurred, the production of a hernia is a simple question of force.

Both Sir Astley Cooper and Makrocki held the view that the most frequent cause is to be found in the existence of blood vessel orifices in the linea alba which undergo a direct dilatation

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as the result of vessel-growth and expansion, producing a point of diminished resistance favorable to the entrance and passage of subserous lipomata.

Finally the important element of force is not to be overlooked. Active force, due to muscular action, or the passive force of a blow or fall may both result in producing rupture. The upper segment of the linea alba is not only wide and thin, but from its situation in the costal triangle is more tense and unyielding than the lower segments. The almost constant inscriptio tendinea placed midway between the umbilicus and xiphoid process and reaching to the costal margins, still further increases the tension. These facts throw additional light upon the question of causation of median hernia above the level of the umbilicus.

Medical literature contains a long array of instances of intense epigastric pain suddenly arising after violent muscular effort with the body bent backwards, or after the lifting of heavy weights, followed later by the appearance, either slowly or rapidly of a hernial tumor. The rapidity of development of hernia after injury, and the factors influencing its onset, will be spoken of in the subsequent paragraphs.

The complexity of symptoms produced by these hernias is one of the remarkable features of the disease. Digestive disturbances, distress after eating, pyrosis, flatulence, nausea, vomiting, epigastric pain, irregular bowel-action, with alternate constipation and diarrhoea, variously associated and in various degrees of intensity, comprise the ordinarily predominant manifestations. The general condition of the patient and consequently his facial expression grow progressively worse, loss of weight or actual emaciation develop and there ensues a marked disinclination for physical or mental exertion. These symptoms may persist for years and succeed in reducing the sufferer to a pitiable state of nervous depression or to the most profound hypochondriasis. Only too frequently the physician fails to detect the small tumor in the linea alba and either considers the complaints of the patient imaginary or exaggerated or ascribes them to chronic stomach or liver disease. These peculiar abdominal sensations are exacerbated in women during the menstrual period.

In some instances, after exertion, after a meal, or subsequent to a fit of coughing, the pain may suddenly become unedurably intense, vomiting, simple or bloody, and bloody diarrhoea may occur, obstinate constipation arise and the patient be compelled to assume a recumbent position. At the same time the tumor, its vicinity or even the entire abdomen may become swollen, tense and tender, and rise in temperature occur.

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The tumor ordinarily ranges in size from the dimensions of a pea to those of a hen's egg although there have been numerous instances of extreme growth. In form these masses may be round, ovoid or lobulated; occasionally they possess in structure the appearance of a bunch of grapes, and are frequently enclosed in a delicate membrane. The ease with which the larger tumors are discovered is offset by the difficulty often experienced in detecting the smallest ones. Only the most painstaking palpation will suffice to disclose the existence of some of these minute masses. A soft tumor, yielding a tympanitic percussion-note and receding, on pressure, with a gurgling sound, may be looked upon as a hernia containing intestine; while a hard tumor mass, firm and unyielding in consistency, and dull on percussion consists largely, if not always exclusively of omentum. The presence of a small section of bowel in the latter variety of tumor may be completely obscured by the combined existence of omentum and a lipoma. It is not invariably an easy task to distinguish a true hernia from a lipoma in the linea alba, since the same symptoms may be the result of either. Differences in density or outline can not be regarded as reliable distinctions between an omental hernia and a fat-hernia. The same may be said of tenderness, as well as of reducibility. Under certain circumstances it may even be possible to reduce a lipoma with greater facility than omentum, and on the other hand the presence of extensive adhesions may render entirely impossible the reduction of either.

Less difficulty attends the diagnosis of those cases which have been the result of traumatic violence. The history is usually characteristic; muscular action, a fall or a blow immediately followed by sudden, severe abdominal pain with or without unconsciousness. Recumbency becomes a necessity. Later, pain and tenderness are definitely limited to a small area in the median line, at which point a tumor appears after a longer or shorter interval, especially apt to result directly from efforts at vomiting or coughing. In several days the pain subsides, the patient is able to resume his occupation, but retains disagreeable sensations of pressure and digestive disturbances which continue to persist and become progressively aggravated. In these cases the symptoms invariably date from the moment of injury; an important diagnostic clew.

Enough has now been said to render apparent the strict necessity of thoroughly examining the abdomen for hernia in all cases presenting more or less obscure gastro-intestinal symptoms. To carry out this examination correctly, it is essential that the patient maintain a standing position with the body bent forward. An erect attitude may serve to close or constrict

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the hernial orifice and make its discovery difficult or impossible, while the reclining position may produce such efficient muscular relaxation as to permit and actually induce the recession of the tumor into the abdominal cavity. It is always advisable to undertake an examination after the patient has partaken of food, since a full stomach materially increases intra-abdominal pressure.

Careful palpation may reveal either a tumor or a separation of fibers of sufficient extent to admit one or more finger-tips. The latter will feel an impact from within the abdomen whenever the patient attempts to cough.

In the treatment of fat-hernias trusses can lay claim neither to palliative nor to curative merit. Their use will under no circumstances do the slightest good, and in the majority of instances will be positively pernicious.

Surgical measures, then, alone afford a means of relief. A comparatively simple and easy surgical procedure, viz., the radical operation, will, without the possibility of failure, promptly restore the unhappy patient from the blackest depths of desperation to the joy of living.

The usual preparation for laparatomy having been made, a longitudinal incision, or rarely, in cases with tumors of great size, a transverse one, is carried across the summit of the hernial prominence in such a way as to freely expose the same. The tumor is then isolated, and its pedicle made accessible. If convinced that the hernial mass consists of nothing but a lipoma the operation is completed at once by ligating the pedicle, and after separating the tumor from it, dropping the stump into the abdominal cavity. Should the pedicle contain an empty peritoneal prolongation, a purse-string suture is introduced at its base. If omentum or gut or both are associated with the lipoma, the abdominal wall must be incised, the sac resected, adhesions destroyed and the peritoneum separately closed with catgut. The muscular layers are united by overlapping. To facilitate the approximation of the skin edges, as well as to obviate undue traction on the muscular wall, two or three tension sutures of silk worm gut are particularly serviceable. No drainage is required.

It needs nothing more than a perusal of the many reported cases to show how grateful the results of this operation have constantly proved. The same has been true of my own cases. The records of two of these I take the liberty to add here for the purpose of illustrating the multiformity as well as the severity of the symptoms associated with this disease and to emphasize the value of surgical interference.

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Case 1. H. C., farmer, residing near Durant, Iowa. Age 22. This patient consulted me early in January, 1893, concerning certain digestive disturbances with which he was afflicted. Occasional nausea, pyrosis, flatulence and pains in the epigastrium, as well as a constant languor and indisposition to work, had for the past year depressed him to a condition of extreme nervousness bordering on hypochondriasis. The examination disclosed the existence of a cherry-sized, slightly sensitive and non-reducible tumor, situated in the linea alba, half way between the ensiform appendix and the umbilicus. On January 18, an operation was performed. An incision, 3 inches in length, through the skin over the tumor, revealed a vascular lipoma, firmly adherent to the peritoneum by means of a lead-pencil-sized pedicle. After the tumor had been separated from its surroundings, the pedicle was ligated without injury to the peritoneum and cut on the distal side of the ligature. The aponeuroses of the abdominal muscles were united with catgut, the overlying skin with silk, and the usual surgical dressings applied. The patient made an uninterrupted recovery and was discharged as cured 10 days after the operation. All symptoms previously complained of had vanished, and 8 years later when I was given an opportunity to see him, he assured me that there had never been the slightest recurrence of his ailments.

Case 2. Mrs. P., Moline, Ill. Age 36. For 8 years this patient had suffered from disturbances of digestion, irregular bowel-action, occasional nausea, vomiting, and colicky pains. In the last two years these symptoms had become to such an extent aggravated that the life of the woman had become a burden to her. The physician who had her in charge, regarded her case as one of extreme nervous dyspepsia.

My own observation of the case dates from the 25th of January, 1892, at which time I discovered a saucer-sized subcutaneous lipoma in the epigastric region. The borders of the growth were considerably flattened, without, however, rendering a definition of the limits of the tumor impossible. Palpation alone was productive of an intense gastralgic attack.

The urgent desire of the patient to submit to an operation on the following day was granted. An incision, 5 inches in length, served to expose a lipoma in such a manner that it could, without great difficulty, be lifted from its bed. When this was done, three slender, fibrous pedicles could be seen, which passing through small openings in the linea alba, were firmly attached to structures beneath. These pedicles, after having been ligated with catgut and cut, disappeared through their respective openings. The overlying skin was sutured with silk.

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The patient recovered in a short period of time, entirely free from her previous symptoms and a few years ago, when I had occasion to see her, she assured me that no signs of her past ailment had ever appeared in the 9 years which had elapsed since the operation. Her general good health and the excellent condition of her digestive system have rendered her capable of performing a vast amount of manual labor.

J. A. SCROGGS.—Members of the Iowa State Medical Association I take pleasure in introducing to you your presiding officer for the ensuing year, Dr. D. C. Brockman of Ottumwa.

D. C. BROCKMAN.—*Ladies and Gentlemen:* I am not going to make you any extended speech. I want to thank you one and all for the kind words you have spoken to me. I want to thank you for the honor conferred upon me by electing me to this office, the highest position that can be occupied by any physician in this great commonwealth. I only ask of you the same support and loyalty you have given my predecessor, Dr. Scroggs. I only wish I could promise you the same judgment, the same ability, as a presiding officer, that he has shown and I want to assure you that where I fail you in judgment I shall not fail you in good intentions. I want you to go home from this meeting, more enthusiastic than when you came and with the firm determination to build the society up, not only to the largest society, but the best society we have ever had. Let us not only have the society large in numbers but large in enthusiasm. What is the pleasure of the convention?

C. F. WAHRER.—I move you that we proceed with the business of the convention. Seconded and carried.

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TRANSACTIONS OF THE HOUSE OF DELEGATES

Meeting at Yeoman's Hall, May 19, 1904

President Scroggs called the meeting to order.

PRESIDENT.—The first order of business will be the roll call. The roll call will now proceed.

Secretary Treynor here proceeded to call the roll as follows:

Adair—J. A. Harper.
Adams—F. E. Potter.
Allamakee—J. H. Thornton.
Appanoose-Wayne—W. L. Downing.
Audubon—D. Jackson.
Benton—Jas. McMorris.
Blackhawk—R. A. Dunkleberg.
Boone—A. A. Deering.
Bremer—W. A. Rohlf.
Buena Vista—J. M. Brooks.
Butler—T. A. Hobson.
Calhoun—J. W. Craig.
Carroll—J. J. Deshler.
Cass—C. L. Campbell.
Cedar—E. J. VanMetre.
Cerro Gordo—F. G. Murphy.
Cherokee—M. N. Voldeng.
Chickasaw—A. Babcock.
Clarke—J. F. Aldrich.
Clayton—L. L. Renshaw.
Clinton—J. F. H. Sugg.
Crawford—G. S. Waterhouse.
Dallas-Guthrie—M. G. Sloan.
Davis—J. C. Swinney, alternate.
Decatur—B. L. Eiker.
Delaware—H. M. Bradley.
Dickinson—E. A. Bare.
Dubuque—J. C. Hancock.
Emmet—C. E. Birney.
Floyd—A. R. Brackett.

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Franklin—J. C. Powers.
Greene—J. W. Presnell.
Grundy—E. A. Crouse.
Hamilton—J. B. Tedrow.
Hancock—W. S. Groom.
Hardin—E. O. Koeneman.
Harrison—I. C. Wood. S. A. Caldwell, alternate.
Henry—F. C. Mehler.
Howard—Geo. Kessel.
Humboldt—H. Hall.
Ida—Carl E. Conn.
Jackson—D. N. Loose.
Jasper—C. E. Boyd.
Jefferson—S. K. Davis.
Jones—A. G. Hejinian.
Keokuk —Wm. Pfannebecker.
Kossuth—W. T. Peters.
Lee—W. G. Doern.
Linn—G. R. Skinner.
Louisa—W. S. Grimes.
Lucas—H. H. Nelson.
Lyon—W. T. Schwabland.
Madison—Ed. Embree. Wm. H. Thompson, alternate.
Mills—C. H. DeWitt.
Mitchell—A. D. Bundy.
Monona—J. W. Huff.
Monroe—H. C. Eschbach.
Montgomery—L. A. Thomas.
Muscatine—F. H. Little.
O'Brien—D. T. Stewart.
Osceola—H. Neill.
Page—T. E. Powers.
Palo Alto—G. Baldwin.
Plymouth—P. L. Brick.
Pocahontas—A. L. Belt.
Polk—D. S. Fairchild and E. L. Stevens.
Pottawattamie—H. B. Jennings.
Poweshiek—E. W. Clark.
Ringgold—S. Bailey.
Sac—W. J. Findley.
Scott—J. H. Kulp.
Shelby—E. L. Cook.
Sioux—N. G. O. Coad.
Story—H. D. Chamberlain.
Tama—N. M. Whitehill.
Union—J. W. Lauder.

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Van Buren—Roger N. Cresap.
Wapello—L. J. Baker.
Warren—Geo. E. Hatfield.
Washington—E. R. Jenkins. M. C. Terry, alternate.
Webster—C. J. Saunders
Winneshiek—M. E. Heflin.
Woodbury—F. J. Murphy.
Worth—J. Herbert Darey.
Wright—W. C. McGrath.

PRESIDENT.—The first order of business will be to listen to the report of the secretary.

SECRETARY V. L. TREYNOR.—*Mr. President and Gentlemen of the Convention:* I have a rather brief report to make. It is as follows:

No. of counties fully organized	88
No. counties organized, dues unpaid	3
No. of counties paid with no charter	1
No. of counties not organized	7
Total	99
Total No. of members approximately	1500
Total amount collected and placed in hands of treasurer, approximately	$3000
No. copies of transactions distributed during year	800

WORK ON CARD INDEX.

Permanent Memoranda Records have been sent to the secretaries of the county societies throughout the state with the request that they distribute same to all doctors in each county. So far about 1000 of these have been returned to me.

I earnestly urge that the various county secretaries make an early and vigorous effort to have these blanks filled and returned to my office in order that the card index may be completed.

Reports from 81 societies have been received and tabulated and the officers and members of each county society recorded as they appear in this volume.

The following orders were issued during the fiscal year:

Orders No. 318 and 322 favor of V. L. Treynor, secretary, cover amounts advanced by secretary for expense of stenog-

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rapher, express, telegrams, transfer, stamps, desk supplies and organization visits during the year.

Order	No.	310	Favor of	Wm. Whitford	$ 152.57
"	"	311	" "	A. M. A.	40.00
"	"	312	" "	Iowa Homestead	36.00
"	"	313	" "	New Nonpariel Co.	636.50
"	"	314	" "	Adams Express Co.	105.60
"	"	315	" "	E. E. Dorr	114.74
"	"	316	" "	Globe Wernecke Co.	31.15
"	"	317	" "	A. M. A.	10.00
"	"	318	" "	V. L. Treynor	105.00
"	"	319	" "	New Nonpariel Co.	5.00
"	"	320	" "	A. M. A.	4.00
"	"	321	" "	C. H. Churchill	39.74
"	"	322	" "	V. L. Treynor	305.50
					$1585.80

Bills for the following were presented, referred to the Committee on Finance, and on motion, the secretary was instructed to issue orders for same.

Order	No.	323	Favor of	E. E. Dorr	$ 92.14
"	"	323½	" "	W. L. Bierring	11.41
"	"	324	" "	D. C. Brockman	28.45
"	"	324½	" "	J. M. Emmert	12.55
"	"	325	" "	G. E. Crawford	26.00
"	"	326	" "	W. J. Egloff	19.23
"	"	327	" "	C. E. Ruth	38.64
"	"	328	" "	Edw. Hornibrook	25.08
"	"	329	" "	E. E. Dorr	5.00
"	"	330	" "	A. M. A.	8.25
"	"	331	" "	Iowa Homestead	24.00
"	"	332	" "	E. Luther Stevens	4.53
"	"	333	" "	Kenyon Printing Co.	29.57
"	"	334	" "	Frank M. VanPelt	25.00
"	"	335	" "	W. B. Small	181.34
"	"	336	" "	V. L. Treynor	400.00

On motion the report of the secretary was received and placed on file.

The following amendments to the constitution were offered and laid over under the rule for one year:

M. G. Sloan.—I move to amend Article 5 of the constitution by adding the words "except the councillors."

W. H. Lewis.—Article 5. The House of Delegates shall

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be the legislative and business body of the society and shall consist of delegates elected by the component county societies as defined in Section 3, Article 4, of this constitution.

G. R. SKINNER.—Article 8, Section 2. All officers shall be elected for a term of one year except the councillors who shall be elected for a term of two years. Six of whom shall be elected each year that terminates with an even number and five on the alternate year.

W. S. GRIMES.—That Section 3, Article 8, be amended by omitting the words "except that of councillor" in the second clause.

W. S. GRIMES.—That Article 10 be so amended to give general meeting a veto power over all acts of the House of Delegates.

W. S. GRIMES.—That Article 5 of the constitution be amended by omitting the words "(2) ex-officio the officers of the society as defined in this constitution."

W. S. GRIMES.—That Section 1, Article 7, be amended to read: "The society shall hold an annual session during which there shall be held daily, if practicable, not less than two general meetings, which shall be open to all members."

W. H. LEWIS.—Amendment to Article 10. At any general meeting the society may, by a two-thirds vote order a general referendum upon any question pending before or passed by the House of Delegates, and the House of Delegates shall by a similar vote of its own members or after a like vote of a general meeting, submit any such question to the membership of the society for a final vote. A majority of the members voting shall decide the question and be binding on the House of Delegates.

The following amendments to the By-Laws were presented and referred to the committee on Constitution and By-laws:

J. M. EMMERT.—I move to amend the By-Laws by striking out in Chapter 5, Section 2, the first four lines and the fifth line to the period after the word "district" and insert the following: "On the first day of the annual session there shall be selected a committee on nominations consisting of 11 delegates, one from each congressional district, such committee shall be selected by the delegates of each congressional district in separate caucuses and such caucuses shall at the same time select the member of the Council for the same district."

J. M. EMMERT.—I move to amend Section 2, Chapter 7, of the By-Laws by inserting the words "and other actual expenses" after the word "traveling" in the fourteenth line of said section. Also striking out the word "may" in the sixteenth line of the same chapter and section and inserting the word "shall."

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C. E. RUTH.—I move that the House of Delegates amend the By-Laws so as to provide for the election of alternate delegate or delegates from each county to act in the absence of the regular delegate or delegates.

W. H. LEWIS.—Section 1, Chapter 4. Strike out last sentence commencing "but if the business interests, etc."

W. H. LEWIS.—Section 5, Chapter 12. Strike out in the fifth and sixth lines the word "reputable" and substitute therefor "physician in good standing and legally registered," and strike out the word "physician" in the sixth line.

W. S. GRIMES.—That Section 2, Chapter 1, of the By-Laws be amended by inserting "or the possession of a receipt for current dues signed by the treasurer of his county society or the treasurer of this society" after the word "assessment."

W. S. GRIMES.—That Chapter 4 be amended by omitting Sections 7 and 8 and re-numbering the remaining sections accordingly.

W. S. GRIMES.—That Section 3, Chapter 6, of the By-Laws be so amended that the first sentence shall read "The treasurer shall give bond for the faithful performance of his duties in such sum as the House of Delegates shall deem sufficient, but not less than twice the probable sum he may handle."

W. S. GRIMES.—That Section 2, Chapter 7, be amended by omitting the words "peacemaker and censor" from the first sentence.

W. S. GRIMES.—That Section 3, Chapter 7, of the By-Laws be so amended that the latter half shall read: "It shall issue charters on application from the county societies." All questions of an ethical nature brought before the House of Delegates or general meetings shall be referred to the council. It shall investigate and report to the House of Delegates, which body shall take action which shall be final, subject to the veto of the general meeting.

W. S. GRIMES.—That Section 4, Chapter 8, of the By-Laws be amended by inserting "It shall publish in book form the transactions each annual session and send a copy of the same to each member of the Society" between the first and second sentences of the section.

W. S. GRIMES.—That Section 3, Chapter 9, be amended by omitting the words "council and."

W. S. GRIMES.—That Chapter 12, of the By-Laws be amended by adding as Section 3. When two counties prefer to unite to form a single component society with a hyphenated name; such societies shall enjoy all the rights and privileges on the same basis as other component societies.

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E. L. STEVENS.—To amend Section 1 of Chapter 8, by adding a committee on Constitution and By-Laws and a Committee on Finance.

W. S. GRIMES.—That Section 8, Chapter 12, be amended by adding "after regular election in such society."

PRESIDENT.—The next order of business is the report of the Chairman of the Board of Councilors.

E. E. DORR.—*Mr. Chairman and Gentlemen:* This report was made up as the information was received at my office. It does not tally in all respects with the secretary's report.

Members of the Council and House of Delegates of the Iowa State Medical Society:

Gentlemen: Pursuant to the resolution adopted at Sioux City, which named and organized the Board of Councilors and authorized its work, I began my work as chairman on the 11th day of June, 1903, when I issued the call for the first meeting of the Councilors, requesting them to meet at my office in Des Moines on June 20 to meet Dr. J. N. McCormack, the National Organizer, for the purpose of receiving such information as might be imparted by him for our benefit in reorganizing and organizing the medical societies in each county in the state of Iowa.

There were present at that meeting the following members of the Council, besides Dr. J. A. Scroggs, president of the society; Dr. V. L. Treynor, secretary, and Dr. W. J. Findley, member of the Committee on Reorganization; Dr. E. Luther Stevens and J. F. Kennedy.

1st District—C. E. Ruth.	7th District—E. E. Dorr.
4th District—W. J. Egloff.	9th District—C. H. Churchill.
6th District—D. C. Brockman.	11th District—E. Hornibrook.

Dr. Brockman was elected secretary of the Board of Councilors.

It was with much pleasure and satisfaction that we listened to the advice of Dr. McCormack and were stimulated to further the interests of the State Society by the talk which he gave us at that meeting.

The first effort at reorganization was made in Webster County, when a call for meeting was made from my office for June 27. I was unable to attend this meeting personally but was represented by Dr. E. Luther Stevens, who has taken a personal interest in the matter of reorganization and who assisted to his utmost in the work at Fort Dodge.

My first trip out of town for the purpose of reorganization was to Adel, where I met the members of the Dallas-Guthrie

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County Medical Society, and organized on July 16, the first hyphenated society in Iowa. My next trip was to Mason City on July 29 to assist Dr. W. J. Egloff, as far as my limited knowledge in organization would permit, in the organization of the Cerro Gordo County Medical Society. I was very much pleased at the attendance at this meeting and that we were able to accomplish an organization that took in all but two members of the legal practitioners of the county. I have visited many counties in the state, the list being as follows:

Dallas-Guthrie,	July 16, 1903	Jasper,	Sept. 15, 1903
Cerro Gordo,	July 29 "	Madison,	Oct. 8 "
Story,	Aug. 5 "	Poweshiek,	Oct. 9 "
Franklin,	Aug. 6 "	Warren,	Oct. 16 "
Marshall,	Aug. 13 "	Greene,	Nov. 9 "
Boone,	Aug. 18 "	Marion,	Nov. 12 "
Mills,	Aug. 20 "	Adams,	Dec. 15 "
Sioux,	Sept. 4 "	Union,	Dec. 16 "
Clay,	Sept. 5 "	Adair,	Dec. 17 "
Dickinson,	Sept. 7 "	Cass,	Mar. 21, 1904
Montgomery,	Aug. 21 "		

In addition to my visits to the counties in the state for the purpose of reorganization, I also visited Omaha on May 4th for the purpose of having a conference with Drs. McCormack and Treynor regarding councilor affairs.

The correspondence has been rather voluminous, amounting to nearly 1,000 letters and 200 postals, as the Councilors have found it advantageous to be in touch regarding the work of organization, and often the secretaries of the county societies have found many questions to ask as well as to answer.

I have requested information from the secretaries of the organized societies two different times during the year and have met with uniform courtesy each time. Many secretaries were too busy, or lacked interest, to answer, but on the whole 75 percent of the counties have cheerfully afforded the information requested.

In my visits to counties in districts outside of my own, I have met the local councilor at the place of meeting, except in the 11th where Dr. Hornibrook was unable to attend. Boone, Marshall, Jasper and Adair were organized by me as they were easier of access than to the councilors in whose districts they were.

The matter of accepting members of other schools has met with favor in most of the counties visited and nearly a dozen have joined, and so far as heard from, those counties have had no

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occasion to regret their action. During the year only one county has found it necessary to expel a member and he was a member of the regular profession.

Only four counties have refused to accept the new constitution and by-laws, viz., Des Moines, Fayette, Johnson and Buchanan. All the others, except Fremont, since accepted, have made an effort to organize or reorganize, and all have elected delegates to the State Society except Mahaska and Taylor. Two hyphenated societies were organized, viz., Appanoose-Wayne and Dallas-Guthrie.

In regard to the relative proportion of counties organized and reorganized, will say that it has been a little difficult to determine in each instance, as this question has not been answered definitely by either the councilors of the districts or the secretaries of the different societies. I think I am safe in saying that we have reorganized about 28 societies and that we have organized new societies in about 59 counties in Iowa. Regarding the other five counties, there is no information at hand. The charter members of all counties organized amounted to about 1,400. The secretary reports only as having paid their dues.

It was found best in many instances to call the county meetings by letter from my office and in each instance where this was done, reorganization was effected easily, as each member of the county had full opportunity to inquire into the purposes and plans of reorganization. This plan was followed in all the counties which I visited except one.

Regarding the division of the state into ten councilor districts, I am pleased to say that a large majority of the Council are in favor of leaving the division as it now stands, viz., 11 districts, the districts being the same as the Congressional districts.

A plan for the betterment of the county societies has received some consideration. It appears reasonable that if we expect the county society to be the unit of the State Society we must devise plans for keeping it alive to the best interests of all medical questions. To further this idea, we should devise some method that can be easily carried out and that will appeal to the county societies. Educational, clinical and ethical questions should be carefully presented to each society by members of the profession who are capable of giving both pleasant and profitable discussions.

I feel certain that two or three men in each district would be willing to visit each society in that district and read a paper on any subject particularly interesting to that community,

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which, when supplemented by papers and discussions by members of the local society, will afford an interesting and profitable meeting for all concerned.

I believe that the councilor for each district should make an effort at least once a year to have a general district meeting at which an exceptionally fine program shall be an inducement for attendance. I also believe that as soon as practicable the councilors of the State Society should arrange for the organization of district societies, and that when such societies are organized, that the vice-presidents of the State Society should be elected from the presidents of the district societies, and the secretary of each district should be the councilor for that district. Except the latter, this is an arrangement which is recommended by the National Society, and has been adopted by a great many of the State Societies.

In answer to this question asked the councilors, "What is to be done to further the interest of the State Society in your district," I have received various answers, among which were the following:

"Revisit county societies, secure district meetings, etc."

"Change the constitution, not making membership obligatory."

"Complete our state organization and stay by it."

"Keep it active."

"Arrange for interesting essays, organize district societies, publish proceedings in Journal form."

"Enthusiasm."

"Keep the county societies alive."

"Appoint a councilor who can give more time to his work."

"Pledge reduction of annual dues in the State Society."

The only method of reducing the per capita expense is for the Society to maintain a Journal for the publication of its proceedings and run it on the plan of the A. M. A. Journal. Furnish to each member the Journal and pay the expenses out of the income of the Journal. This will afford each member of the Society an opportunity to read the papers read at the meeting, besides giving him the desired information regarding medical advancement, both in Iowa and in the United States, and thus induce our men to put forth their efforts, because they will have the satisfaction of knowing that Iowa men will read and review their work. Primarily Iowa men are working for the best interests of the Iowa profession and this method will assist both.

From the information obtained I have completed a list of counties, dates of organization or reorganization, presidents, secretaries and delegates as follows:

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COUNTY	DATE	PRESIDENT	SECRETARY	DELEGATE
Adair	Dec. 17, 1903	W. T. Mulhern	P. McDermid	J. A. Harper
Adams	Dec. 15, 1903	J. H. Wallahan	C. H. Bryant	F. E. Potter
Allamakee	July 28, 1903	S. C. Myers	J. Huecker	J. H. Thornton
Appanoose-Wayne	Nov. 19, 1903	E. Glendenning	C. S. James	W. L. Downing
Audubon	July 11, 1903			D. Jackson
Benton	Nov. 3, 1903	M. Meredith	J. E. Luckey	Jas. McMorris
Blackhawk	Aug. 11, 1903	J. H. Crippen	W. H. Bickley	R. A. Dunkleberg
Boone	Sept. 1, 1903	J. H. Norstrom	E. M. Myers	A. A. Deering
Bremer	Sept. 15, 1903	G. J. Bennett	V. V. Norton	W. A. Rohlf
Buena Vista	Aug. 14, 1903	J. M. Brooks	R. H. Parker	J. M. Brooks
Butler	Dec. 9, 1903	O. P. Thompson	J. G. Evans	T. A. Hobson
Calhoun	Aug. 26, 1903	D. J. Townsend	R. H. Hews	J. W. Craig
Carroll	Sept. 10, 1903	R. R. Williams	A. Kessler	J. J. Deshler
Cass	Apr. 4, 1904	David Findley	U. S. Mullins	C. L. Campbell
Cedar	Oct. 7, 1903	C. W. Baker	R. A. Nash	E. J. VanMetre
Cerro Gordo	July 29, 1903		C. P. Smith	F. G. Murphy
Cherokee	Feb. 24, 1904	P. B. Cleaves	L. A. Westcott	M. N. Voldeng
Chickasaw	June 11, 1903	Ira K. Gardner	N. Schilling	A. Babcock
Clarke	Nov. 5, 1903	J. F. Aldrich	J. L. Millard	J. F. Aldricn
Clay	Sept. 5, 1903	Chas. McAllister	MinervaPorter-Wertz	
Clayton	Oct. 28, 1903	W. L. Duffin	J. D. Brownson	B. B. Renshaw
Clinton	Apr. 13, 1903	Geo. A. Smith	E. L. Martindale	J. F. H. Sugg
Crawford	Sept. 11, 1903	G. S. Waterhouse	A. L. Randall	G. S. Waterhouse
Dallas-Guthrie	July 16, 1903	F. L. Rogers	Walter E. Scott	M. G. Sloan
Davis	Sept. 17, 1903	C. C. Heady	H. C. Young	J. C. Swinney
Decatur	Mar. 31, 1904	F. A. Bowman	B. L. Eiker	B. L. Eiker

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COUNTY	DATE	PRESIDENT	SECRETARY	DELEGATE
Delaware	Dec. 8, 1903	G. H. Fuller	E. G. Dittmer	H. M. Bradley
Dickinson	Sept. 7, 1903	A. E. Rector	E. A. Bare	E. A. Bare
Dubuque	Dec. 28, 1903	Geo. Minges	Jas. Alderson	J. C. Hancock
Emmet	Oct. 8, 1903	Chas. B. Adams	W. E. Bradley	C. E. Birney
Floyd	Aug. 7, 1903	S. R. Hewitt	J. J. Daly	A. R. Brackett
Franklin	Aug. 6, 1903	C. H. Tidd	J. C. Powers	J. C. Powers
Greene	Nov. 9, 1903	F. M. Dean		
Grundy	Aug. 25, 1903	E. A. Crouse	G. W. Kester	J. W. Presnell
Guthrie	(See Dallas-Guthrie)		A. W. Harold	E. A. Crouse
Hamilton	Sept. 13, 1903	F. E. Whitley	C. W. Rummel	J. B. Tedrow
Hancock	Dec. 2, 1903	H. M. Hoag	E. A. Couper	W. S. Groom
Hardin	Sept. 15, 1903	W. H. Lewis	W. E. Whitney	E. O. Koeneman
Harrison	May 14, 1903.	I. C. Wood	G. F. Shiley	
Henry	July 14, 1903	J. M. Evans	W. S. Lessenger	F. C. Mehler
Howard				Geo. Kessel
Humboldt	Aug. 25, 1903	D. E. Graham	H. C. Doon	H. P. Hall
Ida	Oct. 22, 1903	E. C. Heilman	J. E. Conn	Carl E. Conn
Iowa	Oct. 9, 1903	A. C. Moon	E. B. Henderson	
Jackson	Oct. 20, 1903	G. M. Johnson	J. O. Ristine	D. N. Loose
Jasper	Sept. 15, 1903	L. C. S. Turner	H. P. Engle	C. E. Boyd
Jefferson	July 10, 1903			S. K. Davis
Jones	Sept. 22, 1903	W. B. Brock	Harry W. Sigworth	A. G. Hejinian
Keokuk	Oct. 27, 1903	Wm. Pfannebecker	C. A. Trumbauer	Wm. Pfannebecker
Kossuth	July 7, 1903	F. T. Seeley	C. H. Cretzmeyer	W. T. Peters
Lee	July 2, 1903	Frank M. Fuller	Ellet O. Sisson	W. G. Doern
Linn	Sept. 1, 1903	Ward Woodbridge	H. W. Bender	G. R. Skinner

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COUNTY	DATE	PRESIDENT	SECRETARY	DELEGATE
Louisa	Sept. 10, 1903	W. R. Smith	S. J. Lewis	W. S. Grimes
Lucas	Feb. 13, 1904	A. L. Yocum	J. H. Stanton	H. H. Nelson
Lyon	Dec. 29, 1903	Z. T. Holtsclaw	W. T. Schwabland	W. T. Schwabland
Madison	Oct. 28, 1903	S. N. Sayer	W. H. Thompson	Ed. Embree
Mahaska	Oct. 7, 1903	J. T. Coveny	H. C. Homer	
Marion	Nov. 12, 1903	C. P. Cook	C. W. Cornell	B. F. Keables
Marshall	Aug. 13, 1903	N. E. Mighell	W. S. Devine	C. C. Cottle
Mills	Aug. 20, 1903	C. H. DeWitt	H. W. Benson	C. H. DeWitt
Mitchell	Jan. 20, 1904	A. D. Bundy	L. Savre	
Monona	July 1, 1903	J. W. Huff	E. E. Fisher	J. W. Huff
Monroe	May 12, 1903	H. C. Eschbach	Sue B. Gantz	H. C. Eschbach
Montgomery	Aug. 16, 1903	A. Carson	W. A. Lomas	L. A. Thomas
Muscatine	Oct. 8, 1903	H. M. Dean	T. F. Beveridge	F. H. Little
O'Brien	Oct. 29, 1903	F. E. Brown	C. B. Rentz	D. T. Stewart
Osceola	Nov. 10, 1903	W. E. Ely	F. J. Langenhorst	H. Neill
Page	June 19, 1903	J. A. Gillespie	C. F. Perkins	T. E. Powers
Palo Alto	Sept. 29, 1903	F. Hunter	J. Leland VanGorden	G. Bauldwin
Plymouth	Dec. 9, 1903	M. W. Richey	G. H. Mammen	P. L. Brick
Pocahontas	Aug. 25, 1903	A. L. Belt	E. W. Wilson	A. L. Belt
Polk	Mar. 3, 1903	E. Luther Stevens	Lenna L. Meanes	D. S. Fairchild and J. T. Priestley
Pottawattamie	June 17, 1903	W. F. Pierce	F. W. Dean	H. B. Jennings
Poweshiek	Oct. 9, 1903	E. W. Clark	P. E. Somers	E. W. Clark
Ringgold	Aug. 13, 1903	B. B. Waring	S. Bailey	S. Bailey
Sac	Sept. 29, 1903	Thos. Farquhar	F. H. McCray D. J. McCarthy	W. J. Findley J. H. Kulp and

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COUNTY	DATE	PRESIDENT	SECRETARY	DELEGATE
Scott	Nov. 11, 1903	W. L. Allen		H. Matthey
Shelby	Oct. 30, 1903	N. Jasper Jones	F. H. Allen	E. L. Cook
Sioux	Sept. 2, 1903	A. DeBey	C. S. McCarty	N. G. O. Coad
Story	Aug. 5, 1903	E. A. Rawson	H. D. Chamberlain	H. D. Chamberlain
Tama	Sept. 24, 1903	Saml. Thompson	Wm. Corns, Jr.	N. M. Whitehill
Taylor	Oct. 11, 1903	J. P. Scroggs	J. P. Standley	
Union	Dec. 16, 1903	M. B. Reed	J. P. Claybaugh	J. W. Lauder
Van Buren	July 9, 1903	Roger N. Cresap	Jas. A. Craig	Roger N. Cresap
Wapello		W. W. Pascoe	C. F. Huband	L. J. Baker
Warren	Oct. 16, 1903	L. H. Surber	E. Porterfield	Geo. E. Hatfield
Washington	Sept. 3, 1903	G. W. Hay	C. A. Boice	E. R. Jenkins
Wayne	(See Appanoose-Wayne)			
Webster	June 26, 1903	R. Evans	W. W. Bowen	C. J. Saunders
Winnebago	Dec. 9, 1903	H. R. Irish	Luther Wall	
Winneshiek	Dec. 4, 1903	J. S. Roome	Harriette Bottsford	Amy M. E. Heflen
Woodbury	Sept. 18, 1903	Guy C. Rich	F. J. Murphy	
Worth	Dec. 1, 1903	C. W. Saunders	E. H. Dwelle	J. Herbert Darey
Wright	Sept. 3, 1903	T. J. O'Toole	L. D. McNaughton	W. C. McGrath

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PRESIDENT.—*Gentlemen:* You have heard the report of the chairman of the Board of Councilors. What is your pleasure and what disposition will you make of it?

It was moved by B. L. Eiker, of Decatur, that the report be accepted, placed on file, and that the acts of the Board of Councilors and other officers acting under resolutions during the past year be endorsed and legalized by the House of Delegates as if said Board had been elected as provided by the constitution.

Motion carried.

PRESIDENT.—Has the committee on Constitution and By-Laws any report to make?

D. S. FAIRCHILD, Des Moines.—The committee on Constitution and By-Laws have no additional report to make.

The delegates met in district caucuses to elect members of the Nominating Committee.

REPORT OF DISTRICT CAUCUSES.

Committee on Nominations:

1st District—F. C. Mehler, New London.
2nd District—D. N. Loose, Maquoketa.
3rd District—T. A. Hobson, Parkersburg.
4th District—F. G. Murphy, Mason City.
5th District—C. C. Cottle, Marshalltown.
6th District—L. J. Baker, Ottumwa.
7th District—D. S. Fairchild, Des Moines.
8th District—B. L. Eiker, Decatur.
9th District—H. B. Jennings, Council Bluffs.
10th District—L. J. Saunders, Fort Dodge.
11th District—N. M. Voldeng, Cherokee.

On motion the meeting adjourned until May 20 at 8:30 a. m.

MORNING SESSION. MAY 20, 1904. 8:30

The House of Delegates was called to order by the president.

PRESIDENT.—The secretary will proceed with the roll call.

Roll called.

The chair ruled that the Councilors selected at the Sioux City meeting were to act until this meeting when successors were to be regularly elected by the House of Delegates, and the Nominating Committee was instructed to include a member of the Board of Councilors for each congressional district in the list of nominations.

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On suggestion of Dr. Dorr the minutes of May 19th were read in full and president called for corrections if any. There appearing to be none, the president declared the same would stand approved.

J. M. EMMERT.—I move that the action of the secretary in issuing charters to the several county societies of the state be endorsed and legalized by this body. Seconded. Motion carried.

It was moved by E. L. Stevens of Des Moines, and motion seconded, that a sifting committee of three be appointed by the chair on Constitution and By-Laws. Motion carried.

Drs. J. M. Emmert, G. R. Skinner and C. J. Saunders were appointed by the chair.

B. L. EIKER.—I desire to make a motion. I move you, Mr. President, that the Sifting Committee be instructed to have printed copies of such of these proposed amendments to the Constitution and By-Laws as can be acted upon tomorrow, or during this session, and have them here ready to distribute to the delegates by six o'clock this evening.

Motion seconded. Carried.

J. M. EMMERT.—I desire to move you Mr. President, that all these amendments to the Constitution and By-Laws be referred back to the movers or makers with the request that they put them in parliamentary form, and that such maker or mover attach their name to the amendment. Motion seconded. Carried.

The secretary stated that there was no Committee on Finance and that he thought it was necessary that such a committee should be provided for at this meeting.

It was moved by J. M. Emmert that a committee of three be appointed by the chair as a Committee on Finance. Seconded. Motion carried.

PRESIDENT.—I will appoint on that committee, Drs. F. E. Sampson, M. G. Sloan and H. C. Eschbach.

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REPORT OF THE TREASURER.

W. B. Small, treasurer, read his report as follows, which was referred to the Finance Committee:

Your treasurer begs leave to submit the following annual report:

1903.		
April 17, balance as reported at Sioux City meeting	$1152.71	
May 2, to Wm. Whitford, stenographer, Order No. 310		$ 152.57
July 18, to American Medical Association, Order No. 311		40.00
Aug. 11, to Iowa Home for Constitution and By-Laws, Order No. 312		36.00
Sept. 3, to New Nonpariel Company for Trans. and supplies, Order No. 313		636.50
Sept. 19, to Adams Express Company, for express on transactions, Order No. 314		105.60
Sept. 21, to E. E. Dorr, for expenses, Order No. 315		114.74
Sept. 21, to Globe-Wernicke Company, for supplies for secretary, Order No. 316		31.15
Sept. 29, to American Medical Association, Order No. 317		10.00
Oct. 14, to V. L. Treynor for stenographer, Order No. 318		105.00
Oct. 14, to New Nonpariel Company, for supplies for secretary, Order No. 319		5.00
May 11, to V. L. Treynor, for stenographer and express, desk supplies, printing, Order No. 322		305.50
May 17, to exchange on checks received		1.00
May 17, by dues from members and county societies from and including April 17, 1903, to May 18, 1904	$3178.30	
Balance		2787.95
	$4331.01	$4331.01

Respectfully submitted,

W. B. Small, Treasurer.

V. L. Treynor.—The following amendment to the Constitution was offered one year ago and laid over under the rule: That Article 2 of the Constitution be amended by adding the words, "To acquire and hold property, to publish or contract for the publishing of the proceedings."

The adoption of the above was moved and seconded. Lost.

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W. J. Findley of Sac City, suggested that president, secretary and treasurer of this society be authorized to take the necessary steps to incorporate this society under the name of the Iowa State Medical Society.

DR. FIELD.—*Mr. President:* If I may be permitted I will say that the Iowa State Medical Society was incorporated about 30 years ago. The original articles of incorporation are in my possession. They are on file in the recorder's office in this county.

E. L. STEVENS.—I would move that the president and secretary be authorized to make an investigation as to whether these articles be now in force, and if not that they take the necessary steps to incorporate the Iowa State Medical Society. Motion seconded and carried.

On motion all bills against the society were referred to the Committee on Finance.

On motion the society adjourned until 4 o'clock, p. m., at the call of the president.

AFTERNOON SESSION. 4 O'CLOCK P. M.

Meeting called to order by president pursuant to adjournment.

PRESIDENT.—We will hear the report of the Committee on Publication.

The secretary read the report as follows:

Your Committee on Publication beg leave to make the following report:

As per instructions from the society, we had 800 copies 1903 transactions printed and distributed, and we submitted specifications for 1904 transactions to all of the prominent publishing firms in the state. The following bids were received and were made on a basis of 1400 copies of approximately 480 pages each. To be printed on the same kind and grade of paper, binding and workmanship as the 1903 volume. This includes wrapping for mailing or express and delivery of same in bulk to the secretary in Council Bluffs, Iowa.

Matt Parrott & Sons	$ 780.00
Welch & Co	930.00
New Nonpariel Co	888.00
Iowa Homestead	1100.00
Republican Printing Co	700.00

The latter being the most favorable we recommend that the contract be awarded them and that G. R. Skinner be authorized

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and instructed to make a contract with them as per specifications and their bid.

V. L. TREYNOR, Chairman.
W. B. SMALL,
A. M. POND,
J. W. COKENOWER,
Committee.

On motion the report was received and the publication of the proceedings of the society, etc., was awarded to the Republican Printing Co., of Cedar Rapids, Iowa.

It was moved and seconded that the minutes of the last meeting of the society as published in the transactions be approved. Motion carried.

It was moved and seconded that the matter of fixing the salary of the secretary and treasurer be referred to the Committee on Finance. Carried.

It was moved and seconded that the committee on Finance be instructed that when fixing the salaries of the secretary and treasurer they exact bonds in equal amounts from each. Carried.

B. L. EIKER.—*Mr. President:* In session this morning there was a motion made and carried which provided that the Sifting Committee should report and have amendments to the Constitution and By-Laws printed and given to the members of the House of Delegates by 6 o'clock this evening. In conference with that committee I am informed that they are unable to meet that requirement. They ask further time, and I therefore move you that they be granted until tomorrow morning to comply with that motion. Seconded. Carried.

Moved and seconded that a committee of three be appointed to canvass the situation with reference to the next meeting place and to consider the invitations extended and report tomorrow morning.

It was moved as a substitute that the matter of the selection of place of the next meeting be placed in the hands of the Nominating Committee. Seconded.

The mover of the former motion accepted the amendment. Motion carried.

On motion, the meeting adjourned until May 21, at 8 a. m.

MORNING SESSION. MAY 21, 1904

Meeting called to order by the president.

Reading of the minutes by the secretary.

There being no objections, the minutes were declared approved as read.

Secretary called the roll.

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PRESIDENT.—We will now listen to the reading of the report of the Nominating Committee.

Dr. D. S. Fairchild, chairman, read the report as follows:

REPORT OF NOMINATING COMMITTEE.

For President:
D. C. Brockman, Ottumwa.
B. S. Criley, Dallas Center.
H. H. Clark, McGregor.

For First Vice President:
V. L. Treynor, Council Bluffs.

For Second Vice President:
Jennie McCowen, Davenport.

For Secretary:
J. F. Clark, Fairfield.

For Treasurer:
W. B. Small, Waterloo.

COUNCILORS.

Councilors for 1 year:
C. E. Ruth, Keokuk.
Edward Hornibrook, Cherokee.

Councilors for 2 years:
D. W. Crouse, Waterloo.
C. H. Churchill, Fort Dodge.

Councilors for 3 years:
Walter L. Bierring, Iowa City.
J. M. Emmert, Atlantic.

Councilors for 4 years:
G. E. Crawford, Cedar Rapids.
H. C. Eschbach, Albia.

Councilors for 5 years:
W. S. Conklin, Des Moines.
O. W. Foxworthy, Leon.
J. W. Egloff, Mason City.

Committee on Scientific Work and Investigation:
Secretary Elect.
F. E. Sampson, Creston.
R. E. Coniff, Sioux City.

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Committee on Public Policy and Legislation:
President Elect.
Secretary Elect.
F. W. Powers, Waterloo,
D. H. Bowen, Waukon.
E. E. Dorr, chairman, Des Moines.

Committee on Publication:
Secretary Elect.
G. R. Skinner, Cedar Rapids.
C. S. James, Centerville.

Committee on Necrology:
A. B. Bowen, chairman, Maquoketa.
R. L. Cleaves, Cherokee.
F. C. Wahrer, Fort Madison.
J. H. Cleaver, Council Bluffs.
F. A. Ely, Des Moines.

Committee on Finance:
M. G. Sloan, Dexter.
H. C. Eschbach, Albia.
F. E. Sampson, chairman, Creston.

Committee on Constitution:
J. M. Emmert, Atlantic.
G. R. Skinner, Cedar Rapids.
C. J. Saunders, Fort Dodge.

Delegate to American Medical Association:
E. E. Dorr, Des Moines.

Alternates or additional delegates to serve one year to be appointed by the president and secretary.

It was moved and seconded that the report of the Committee on Nominations be accepted, taken up and voted on by sections by ballot. Carried.

PRESIDENT.—I will appoint Drs. C. J. Saunders and R. N. Cresap as tellers.

J. M. EMMERT.—*Mr. President:* Before the ballot is closed, I would like to make an announcement. The delegate from my county went home sick and left with me his proxy, and I would like to vote that proxy.

PRESIDENT.—If there is no objection Dr. Emmert may exercise that privilege.

A. A. Deering stated that he objected.

B. L. EIKER.—I move you Mr. President, that no proxies be allowed. Seconded and carried.

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A ballot was taken resulting in the election of D. C. Brockman of Ottumwa for president. All other officers and committeemen were elected as recommended by the committee on nomination except that J. Fred Clark was elected first vice president and V. L. Treynor, secretary. Des Moines was chosen for the next place of meeting and the date of meeting fixed for the third Wednesday in May continuing three days, provided that the A. M. A. does not meet on or prior to that time, in which event said time shall be changed to the third Wednesday in April, 1905.

Introduction of President-elect D. C. Brockman, by the retiring president, J. A. Scroggs.

J. A. SCROGGS.—*Gentlemen:* It is my very great pleasure to present to you your president-elect whom I think should now assume his duties as president. Therefore I think it proper to install Dr. Brockman at this time. I wish to thank the House of Delegates for its support and assistance and its zeal in accomplishing the order of business of this important body, and also for the support it has given me. I now introduce to you our friend, Dr. Brockman, your president, and the president of the best State Medical Society in America.

D. C. BROCKMAN.—*Gentlemen:* I am unable to thank you for the kindness you have shown me today. I am unable to say how grateful I feel for the honor you have conferred upon me, and I assure you that I appreciate this honor more than any other man in this state society could appreciate it. I realize that you have put me in a most honorable position, that you have conferred on me the greatest honor that can be conferred on a doctor in the state of Iowa, and especially do I thank you for this, because on your part it has been entirely voluntary. There is not a member of the House of Delegates who can say that I ever approached him directly or indirectly and requested him to vote for me, or ever authorized any other man to do so. Therefore, gentlemen, I feel that I have been honored by the House of Delegates more than I can express to you, and I thank you.

We will now listen to the reading of the report of the Committee on Legislation, as follows:

To the Members of the House of Delegates of the Iowa State Medical Society:

Gentlemen: As chairman of your Committee on Legislation, I beg leave to make the following report:

About January 20, we were informed that a petition signed by more than three thousand citizens was placed on file at the office of the governor, asking that an osteopath be appointed

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on the Board of Health to replace Dr. Adams whose term of office was about to expire. Feeling that the matter properly came under our care we sent circular letters and petitions, asking the governor to appoint only a man skilled in sanitary science to that position, to each county society in the sate, asking that the petition be immediately circulated throughout the county and as many signatures obtained from doctors as possible and returned to us at once.

Early in February I transmitted to the governor such petition signed by almost one thousand physicians. On February 14, in company with Dr. Scroggs, we visited the governor and interviewed him on the subject, obtaining his promise that our prayers should be answered. About the middle of February a bill was introduced asking for an appropriation with which to build a sanitarium for tuberculosis patients.

Your committee used most vigorous efforts to effect its passage, but later when it was evident if passed, the appropriation would be too small to do any material good, we conferred with our friends in the House and Senate as to the advisability of having the matter referred to the Board of Control, from whom the next legislature will receive a report as to the advisability of the measure.

We are happy to state that we feel that conditions are favorable for the passage of the bill in two years. The committee used its influence for the passage of the Bacteriological Laboratory bill which passed both houses and is now a law. Other matters of sanitary interest were also looked after by your committee as it seemed best at the time. Your committee wish especially to thank Dr. E. L. Stevens of Des Moines, Dr. W. B. LaForce of Ottumwa, and the various doctors in both house and senate for the splendid work they did, and would recommend that more doctors go to the legislature in the future to look after interests of public health and the good of medical and sanitary legislation.

We would also suggest that hereafter the chairman of the committee on legislation should live in Des Moines, in order that he may be in touch with the legislature when in session.

Respectfully submitted,

D. C. Brockman,

Chairman Committee on Legislation.

On motion the report of the Committee on Legislation was received and placed on file.

President.—We will now hear the report of the Committee on Finance.

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M. G. Sloan, chairman, read the report of the Finance Committee as follows:

To House of Delegates of Iowa State Medical Society:

Your Committee on Finance respectfully submit the following report:

We have carefully examined the accounts of the secretary and treasurer and have found same correct.

We recommend that the salary of the secretary for the ensuing year be fixed at $500, he to pay for his bond and services of stenographer; and that the salary of the treasurer be $150, he to pay the expense of procuring a bond.

M. G. SLOAN,
H. C. ESCHBACH,
Committee.

On motion the report was received. On motion of E. E. Dorr the salary of the secretary was made $650.00 and that of the treasurer $150 per annum. On motion this was made to apply to the fiscal year 1903 and 1904 salary as well as for 1904 and 1905.

On motion the secretary was authorized to draw on the treasurer for current expenses during the fiscal year. On motion same action was taken relative to expense incurred by the committee on publication.

J. M. EMMERT.—*Mr. President:* Your Committee on Constitution and By-Laws is ready to make its report.

Before making this report I wish to offer an explanation. By a motion we were required to have these amendments printed and placed before you this morning. The committee did not finish their work until about 9:30 last night and one of our members started out to put it in the hands of the printer and ran up against the printer's union the first thing; they had quit business for the night, but said if we would bring the report around in the morning they would put it up. Dr. Saunders took it around at 7:30 when they said to him it would take three hours, and we concluded to come to you with this kind of a report and ask you to either waive that part of it or have the committee continued. The amendments to the Constitution we did nothing with, as they lie over for one year.

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C. J. SAUNDERS.—*Mr. President:* Your Committee on Constitution and By-Laws respectfully submit the following report:

REPORT OF COMMITTEE ON CONSTITUTION AND BY-LAWS.

1. We recommend the adoption of the amendment offered by J. M. Emmert to Section 2, of Chapter 7, of the By-Laws.

2. We recommend as a substitute to the amendment offered by Dr. C. E. Ruth that the County Societies amend their Constitution so as to elect an alternate delegate for each delegate to the House of Delegates, said alternate to act only when the regular delegate is not present.

3. We recommend for indefinite postponement the amendment offered by D. H. Lewis to Chapter 4, Section 1, of the By-Laws.

4. We offer as a substitute for the amendment offered by Dr. W. S. Grimes to Section 2, of Chapter 1, of the By-Laws, "That there shall be inserted after the word assessment in the fifth line of Section 2, Chapter 1, of the By-Laws the following: 'or hold a receipt for dues for the current year from the treasurer of the County Society to which he belongs'."

5. We recommend for indefinite postponement the amendment to Chapter 4, Sections 7 and 8, offered by Dr. W. S. Grimes.

6. We offer the following substitute for the amendment offered by Dr. W. S. Grimes to Section 3, Chapter 6. That Section 3, Chapter 6, be amended by striking out the words beginning with "The" in the first line and ending with "Requisite" in the fourth line and insert the following: "The treasurer shall give bond in the sum of $5,000 such bond to be procured from some reliable Security Co. and to be approved by the Finance Committee. The expense of procuring such bond to be paid by this society. Said bond to be held by the chairman of the Finance Committee. All surplus money in the hands of the treasurer shall be placed at interest in some bank approved by the Finance Committee and such interest shall be turned into the treasury."

7. We recommend for passage the amendment to Section 2, Chapter 7, of the By-Laws offered by Dr. W. S. Grimes.

8. We recommend for indefinite postponement the amendment to the By-Laws offered by Dr. W. S. Grimes to Section 3, Chapter 7.

9. We recommend for indefinite postponement the amendment offered by Dr. W. S. Grimes to Section 4, Chapter 8, of the By-Laws.

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10. We recommend for passage the amendment offered by Dr. W. S. Grimes to Section 3, Chapter 9, of the By-Laws.

11. We recommend for indefinite postponement the amendment offered by Dr. W. S. Grimes to Section 8, Chapter 12 of the By-Laws.

12. We recommend for indefinite postponement the amendment offered by Dr. W. S. Grimes to Section 3, Chapter 12, of the By-Laws.

13. We recommend for indefinite postponement the amendment offered by Dr. W. H. Lewis to Section 5, Chapter 12, of the By-Laws.

Respectfully submitted,

J. M. EMMERT.
G. R. SKINNER.
C. J. SAUNDERS.

The above recommendations were considered and adopted separately after which, on motion, the report of the committee was adopted as a whole.

The following amendments to the By-Laws were also adopted:

The amendment of Chapter 5, Section 2, offered by J. M. Emmert, and the one to amend Section 1, of Chapter 9, offered by E. L. Stevens.

J. A. SCROGGS.—*Mr. President:* You will remember when the question of incorporating this body was up yesterday, or day before, Dr. Field made the statement that the Iowa State Medical Society was an incorporated body and a committee was authorized to investigate the matter and take the necessary steps to incorporate. Dr. Field has placed in my hands the first volume ever issued by this society, which is certainly very valuable. It contains the transactions of 1868 and in it are published the Articles of Incorporation of the Iowa State Medical Society.

Moved by L. A. Thomas and seconded, that the secretary be instructed to have a leaflet printed showing the amendments to the By-Laws adopted and that a copy be sent to each county secretary.

E. E. DORR.—I will say there are probably 1,000 copies of Constitutions in my office awaiting the order of the secretary. It seems to me that the motion by Dr. Thomas is proper and I think there should be at least 1,000 of these leaflets printed and pasted in the copies before they are sent out, and I move you an amendment to that effect. Seconded. Carried as amended.

Moved and seconded that the president and secretary be

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empowered to issue credentials to all the alternates to the American Medical Association that may be necessary. Carried.

Moved and seconded that the committee on publication take charge of the disposal of the books and documents of the society. Carried.

Moved and seconded that the information to obituaries or data concerning the death of members be sent to the committee on necrology as rapidly as possible so that they can make a report to the committee on publication by the middle of June. Carried.

Moved and seconded that the House of Delegates, speaking for the Iowa State Medical Society, appreciate the service rendered the State Society by the retiring officers during the past year, particularly the members of the Council who have acted under the instruction of the resolution adopted at Sioux City.

(Dr. Baker of Ottumwa, called to the chair).

Gentlemen: You have heard the motion that has just been made. Are there any remarks on the motion. Motion carried.

On motion the House of Delegates adjourned subject to the call of the president.

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REPORT ON NECROLOGY

Dr. John W. Harriman, professor of Anatomy in the State University of Iowa, died at his home in that city on January 25, 1904, following an operation for appendicitis. Dr. Harriman graduated from the State University in '91 and in the following fall was elected Demonstrator of Anatomy. A few years later he was made Professor of Anatomy which position he held at the time of his death. During the Spanish-American War he served as surgeon major and was untiring in his efforts in behalf of his regiment. As a surgeon Dr. Harriman had gained an enviable reputation, the best interests of his patients being the first consideration with him always. As a teacher of Anatomy he stood without a peer, his inimitable method making this ordinarily dry subject interesting to his students and thereby inculcating in them a knowledge of the subject so essential to the medical man. Dr. Harriman as a man was esteemed by all with whom he came in contact and he was loved best by those who knew him best.

John West Kirkpatrick was born at Philadelphia, Pa., October 9, 1862, and died May 13, 1903, of heart failure. He took a course in medicine in the Rush Medical College graduating from that institution in 1888. He was president of the Eastern Iowa Medical Association at the time of his death. Also president of the Wyoming School Board and the Wyoming Telephone Co., and a member of the leading fraternities. On October 8, 1890, he was married to Miss Mable Loomis who with four children survives him. He is also survived by two brothers. In his death his community lost a strong man and a patriotic citizen and the profession an able and enthusiastic co-laborer.

Henry M. Replogle was born April 3, 1865, and died May 27, 1904. He obtained a common school education attending the Iowa Wesleyan University in 1887-88. He taught school for a few years and was married to Sarah Jane McCune April 2, 1889. November 19, 1892, he graduated from the Iowa Agricultural College and from Rush Medical College May 22,

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1895. He began his practice in Centerville July 1, 1895, where he remained until May 30, 1898, then did post-graduate work in Chicago until Feb., 1900, when he located in Udell, Iowa, where he followed his profession until his death. He was a member of the Appanoose-Wayne, Des Moines Valley, Iowa State, and American Medical Associations. His death was due to internal hemorrhage, the result of an injury. He was a zealous christian and a devout member of the Christian church. He is survived by a wife, one daughter and friends too numerous to count.

The death of D. M. Wick of Cedar Falls, second vice president of the Iowa State Medical Society, which occurred March 1, comes as a personal loss to a large number of its members among whom he was a faithful worker for the betterment of medical conditions. He was also greatly interested in the American Medical Association and very seldom missed its meetings. Dr. Wick practiced medicine at Cedar Falls for fourteen years, coming to that place from New Hartford, where he had located in 1875. He was one of the active members of the profession, both in practice and in society affairs, and his counsel was frequently sought in both. He was a graduate from the Chicago Medical College in 1874 since which time he was in continuous practice.

Dr. F. M. Powell was born in Ohio, 1848. Received a common school education under serious disadvantages. For several years he was both a student of medicine and a teacher in the public schools. He graduated from Sterling College of Medicine at Columbus, Ohio, in 1875. In 1882 he was appointed superintendent of the State Institution of Feeble Minded at Glenwood, which position he held until a few months before his death. Dr. Powell was well known to the profession of Iowa, as he has been for twenty-one years the superintendent of the Glenwood Institution for Feeble Minded Children. Much of the progress of this institution has been due directly to the power and energy and persistent effort of Dr. Powell. The Institution is a monument to his memory. For years Dr. Powell has advocated, both in public and in Medical societies, the necessity of a separate institution for the care of epileptics. He was about to realize the desired wish of his life—for the medical profession and the public at large had begun to take sufficient interest in the matter to lead to the belief that this desire might soon be accomplished. Since the beginning of Dr. Powell's administration of the institution the membership has increased from 239 to nearly 1,000 members. Of his family who survive

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him are his wife and four children, one daughter, Dr. Velura E. Powell, who will carry on the work that he had anticipated doing at their new home in Red Oak.

Dr. Jefferson Williamson was born in Adams county, Ohio, March 31, 1827. Died January 12, 1904. For fifty-one years he has been a resident of Ottumwa, and as a man, a christian, a physician, a husband, a father, a philanthropist and a friend he had few equals. He received the degree of M. D. from the Medical Department of Western Reserve College in Cleveland, Ohio, in 1852. May 27, 1852, he was married to Miss Sarah N. Jones of Wilmington, Ohio. What a happy union this was none can fully appreciate save those who have been privileged to be inmates of that household. Dr. Williamson came to Ottumwa in November, 1852, one of the pioneer physicians of the city. He built up a large and extensive practice and early took a prominent position as one of the leading physicians of southeastern Iowa. He was president of the State Medical Society in 1865 and again in 1873. He was a member of the American Medical Congress held at Washington, D. C., in September, 1887. Dr. Williamson's circle of intimate friends was unusually large and he was unswerving in his loyalty to them; his acquaintance extended widely through the state and many expressions of regard and affection have come from friends and medical brethren in other cities.

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LIST OF OFFICERS AND MEMBERS

of

COUNTY SOCIETIES

ADAIR COUNTY MEDICAL SOCIETY.

President—T. W. Mulhern, Greenfield.
Secretary—P. McDermid, Fontanelle.
Delegate—J. A. Harper, Greenfield.

Bowers, A. S., Orient.
*Chapman, R. R., Bridgewater.
Culverson, F. P., Greenfield.
*DeWitt, F. T., Berea.
*Harper, J. A., Greenfield.
*Howe, J. E., Greenfield.
*Keith, W. K., Fontanelle.
*McDermid, P., Fontanelle.
Mulhern, T. W., Greenfield.
Scott, C. B., Fontanelle.
Tinsman, E., Orient.

ADAMS COUNTY MEDICAL SOCIETY.

President—J. H. Wallahan, Nodaway.
Secretary—Chas. H. Bryant, Corning.
Delegate—F. E. Potter, Corning.

Amdor, F. P., Carbon.
*Amdor, W. F., Carbon.
Bryant, C. H., Corning.
Coakley, J. W., Mt. Etna.
Messenger, W E., Prescott.
Potter, F. E., Corning.
Stottler, W. F., Corning.
Sweet, H. L., Mt. Etna.
Thompson, James R., Corning.
Wallahan, J. H., Nodaway.

ALLAMAKEE COUNTY MEDICAL SOCIETY.

President—Silas C. Meyers, Rossville.
Secretary—John Huecker, Lansing.
Delegate—John H. Thornton, Lansing.

Bossler, B. G., Harper's Ferry.
Bowen, A. S., Waukon.
*Bowen, Daniel H., Waukon.
Boyer, Howard C., New Albin.
Cain, J. W., Waukon.
Gable, E. J., New Albin.
Harrington, J. F., New Albin.
Huecker, John, Lansing.
Letourneau, P. H., Waukon.
Meyers, Silas C., Rossville.
Strock, David, Waukon.
Thornton, J. H., Lansing.
Vedeler, Christian J., Waukon.

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APPANOOSE-WAYNE COUNTY MEDICAL SOCIETY.

President—E. Glendenning, Lineville.
Secretary—Chas. S. James, Centerville.
Delegate—W. L. Downing, Moulton.

Bamford, E. E., Centerville.
Banning, C. W., Seymour.
*Bowen, C. P., Centerville.
*Drennan, D. D., Corydon.
Brown, C. F., Centerville.
Bullis, W. L., Allerton.
Burchett, Edwin, Seymour.
Calbreath, C. N., Lineville.
Case, T. J., Unionville.
Day, W. R., Moravia.
DeNoon, J. W., Seymour.
*Downing, W. L., Moulton.
Earnest, W. H., Seymour.
George, A. B., Centerville.
Glendenning, E., Lineville.
Hall, E. T., Plano.
Hinkle, G. W., Harvard.
Hurt, U. L., Numa.
Huston, O. C., Centerville.
*James, C. S., Centerville.
McCoy, J. N., Corydon.
Musgrave, G. J., Cincinnati.
*Replogle, J. A., Centerville.
*Replogle, H. M., Centerville.
Richie, L. T., Mystic.
Sawyer, C. E., Centerville.
Sellers, M. Y., Moulton.
Shipley, J. L., Corydon.
Smith, H. T., Humeston.
Sollanbarger, G. H., Corydon.
Tillmont, C. P., Centerville.
Walker, B. S., Corydon.
Walker, W. G., Bethlehem.
*Ware, W. F., Moulton.

AUDUBON COUNTY MEDICAL SOCIETY.

President—N. P. Lawritzen, Audubon
Secretary—D. Jackson, Audubon.
Delegate—D. Jackson, Audubon.

Beers, A. L., Gray.
Brooks, A. L., Audubon.
Childs, R. F., Audubon.
*Jackson, D., Audubon.
Koob, W. R., Brayton.
Lawritzen, N. P., Audubon.
Slamberg, A., Kimballton.

BENTON COUNTY MEDICAL SOCIETY.

President—M. Meredith, Vinton.
Secretary—J. E. Luckey, Vinton.
Delegate—James McMorris, Belle Plaine.

Angus, H. A., Garrison.
Bielenberg, J. R., Keystone.
Beller, O. B., Vinton.
Boles, I. S., Shellsburg.
Bryant, A. J., Blairstown.
Chenowoeth, C. B., Newhall.
Fellows, A. R., Vinton.
Griffin, C. C., Vinton.
Griffin, Jr., C. C., Vinton.
Jewell, R. T., Urbana.
King, O. W., Keystone.
Kirkland, B. F., Mt. Auburn.
Luckey, J. E., Vinton.
McCorkle, G. E., Shellsburg.

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Luckey, Geo. M., Shellsburg.
*McMorris, J., Belle Plaine.
Meredith, M., Vinton.
Payne, Hesop R., Van Horne.
Simpson, C. E., Norway.
*Vincent, W. A., Belle Plaine.
Wagner, G. A., Van Horne.
Watson, Sam'l H., Blairstown.
Whitney, J. P., Blairstown.
*Williams, J. A., Belle Plaine.
Worley, J., Belle Plaine.
Wyckoff, G. L., Vinton.

BREMER COUNTY MEDICAL SOCIETY.

President—G. J. Bennett, Denver.
Secretary—V. V. Norton, Waverly.
Delegate—W. A. Rohlf, Waverly.

Auner, J. F., Waverly.
*Bennett, G. J., Denver.
Bradford, D. S., Janesville.
Brown, C. T., Waverly.
Chaffee, O. L., Waverly.
Cross, G. B., Plainfield.
Dunkelberg, B. C., Tripoli.
Graening, A. K., Waverly.
Graening, C. H., Waverly.
*Kern, L. C., Waverly.
Norton, V. V., Waverly.
Patterson, C. E., Sumner.
Robinson, R. E., Tripoli.
Rohlf, W. A., Waverly.
Stafford, R. H., Sumner.
Whitemire, W. L., Sumner.

BLACKHAWK COUNTY MEDICAL SOCIETY.

President—J. H. Crippen, Waterloo.
Secretary—W. H. Bickley, Waterloo.
Delegate—R. A. Dunkelburg, Waterloo.

Askew, T. B., Waterloo.
Anderson, L. N., Cedar Falls.
Bickley, G. G., Waterloo.
Bickley, W. H., Waterloo.
Brinkman, J. E., Waterloo.
Brown, H. W., Waterloo.
Chase, C. S., Waterloo.
Chisholm, R. B., La Porte.
Clark, G. Hardy, Waterloo.
Clark, Margaret V., Waterloo.
Crippen, J. H., Waterloo.
*Crouse, D. W., Waterloo.
Cutler, F. H., Cedar Falls.
Doxey, L. B., Washburn.
Dunkelburg, E. E., Waterloo.
Dunkelburg, R. A., Waterloo.
*Evans, L. E., Waterloo.
Graham, J. C., La Porte.
Hanson, A. S., Waterloo.
Hartman, F. T., Waterloo.
*Hearst, W. L., Cedar Falls.
Leffler, E. G., La Porte.
Mead, F. M., Cedar Falls.
McManus, T. U., Waterloo.
McMillen, E. C., Hudson.
Nesbit, G. M., La Porte.
Nestor, R. J., Waterloo.
O'Keefe, J. E., Waterloo.
Philips, Thomas, Raymond.
*Powers, F. W., Waterloo.
*Riley, T. F., Waterloo.
Rohlf, E. L., Waterloo.
Sage, F. C., Waterloo.
Shannon, E. R., Waterloo.
*Small, W. B., Waterloo.
Sumner, G. H., Waterlo.
Taylor, T. G., Waterloo.
Vanderveer, F. L., Cedar Falls.
Waddey, E. J., Waterloo.
Waterbury, C. A., Waterloo.

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BOONE COUNTY MEDICAL SOCIETY.

President—J. H. Norstrom, Boone.
Secretary—E. M. Myers, Boone.
Delegate—A. A. Deering, Boone.

*Bassett, L. A., Boone.
Carder, J. B., Boone.
Clark, C. B., Ogden.
Clark, O. D., Ogden.
*Deering, A. A., Boone.
Deering, A. B., Boone.
*Ganoe, J. O., Pilot Mound.
Harpel, K. S., Boone.
Healey, M. A., Boone.
Kelley, T. J., Boone.
*Lindahl, J., Boone.
Lyle, F. H., Boone.
Melott, E. H., Ogden.
Montague, E. L. D., Luther.
*Myers, E. M., Boone.
Nims, E. A., Boone.
*Norstrom, J. H., Boone.
Noyes, J. H., Ogden.
*Payne, C. W., Boone.
Peo, E., Boone.
Pollock, W. L., Boone.
*Ransom, W. L., Madrid.
*Rowe, G. D., Boone.
Shafer, A. S., Fraizer.
Sickler, D., Ogden.
Stanger, G. H., Boone.
Stockslager, S. O., Boone.
*Walker, J. C., Boone.

BUENA VISTA COUNTY MEDICAL SOCIETY.

President—J. M. Brooks, Newell.
Secretary—R. H. Parker, Storm Lake.
Delegate—J. M. Brooks, Newell.

Ash, E. H., Storm Lake.
Bridge, B. B., Albert City.
Brooks, J. M., Newell.
Foley, F. C., Newell.
Hadden, Geo., Alta.
Harvey, L. J., Alta.
Kerlin, W. W., Storm Lake.
Nordstrum, J.H., Sioux Rapids.
Parker, R. H., Storm Lake.
Pease, C. I., Linn Grove.
Sanders, W. E., Alta.
*Smith, E. E., Sioux Rapids.
Stevens, A. W., Storm Lake.

BUTLER COUNTY MEDICAL SOCIETY.

President—O. P. Thompson, Shell Rock.
Secretary—J. G. Evans, New Hartford.
Delegate—T. A. Hobson, Parkersburg.

Evans, J. G., New Hartford.
*Hobson, T. A., Parkersburg.
Osborne, C. F., Aredale.
*Reid, D., New Hartford.
Reeve, D. N., Bristow.
Strout, A. O., Parkersburg.
Smith, H. C., Clarksville.
*Thompson, O. P., Shell Rock.

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CALHOUN COUNTY MEDICAL SOCIETY.

President—D. J. Townsend, Lohrville.
Secretary—R. H. Hews, Rockwell City.
Delegate—J. W. Craig, Lohrville.

Cooper, J. M., Rockwell City.
*Craig, J. W., Lohrville.
*Farlow, S. J., Farnhamville.
Hews, R. H., Rockwell City.
Hews, L. D., Rockwell City.
Hibbs, F. V., Lohrville.
Hoxey, Robt. P., Knierim.
Hull, J. F., Lake City.
Keeney, W. R., Yetter.
Martin, D. T., Pomeroy.
*McCrary, D. W., Lake City.
Mullarky, H. J., Manson.
Nelson, Albert B., Manson.
Norton, A. C., Rockwell City.
Pray, G. L., Lake City.
*Speaker, W. T., Manson.
Taylor, Chas., Pomeroy.
Thompson, J. R., Jolley.
*Townsend, D. J., Lohrville.
Young, H., Manson.

CARROLL COUNTY MEDICAL SOCIETY.

President—R. R. Williams, Manning.
Secretary—A. Kessler, Carroll.
Delegate—J. J. Deshler, Glidden.

Bowman, L. J., Carroll.
Carlisle, A. W., Manning.
DeArmond, W. N., Dedhorn.
*Deshler, J. J., Glidden.
*Downs, Ed. W., Coon Rapids.
Downs, J. A., Coon Rapids.
Dunkle, S. C., Glidden.
Feestra, J. B. H., Arcadia.
Henry, C. W., Coon Rapids.
Jewell, H. E., Coon Rapids.
Johnson, E. G., Carroll.
Kelly, B. C., Carroll.
*Kesner, A. K., Manning.
Kessler, A., Carroll.
Meir, E. W., Carroll.
*Patty, L. G., Carroll.
Smith, M. H., Ralston.
Williams, R. R., Manning.
*Wright, A. L., Carroll.

CASS COUNTY MEDICAL SOCIETY.

President—D. F. Findley, Atlantic.
Secretary—U. S. Mullins, Atlantic.
Delegate—C. L. Campbell, Atlantic.

Beaver, C. V., Anita.
Brown, H. B., Griswold.
Brown, F. O., Lewis.
Campbell, C. L., Atlantic.
*Emmert, J. M., Atlantic.
Findley, David, Atlantic.
*Greenleaf, Wm. S., Massena.
Jones, C. R., Griswold.
King, F. R., Anita.
McClees, C. H., Marne.
Mullins, U. S., Atlantic.
Powell, Preston, Adair.
Plunket, I. Z., Lewis.
Snelson, Wm., Massena.
*Stults, M. F., Wiota.
Weaver, A., Cumberland.
*Zook, A. J., Adair.

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CEDAR COUNTY MEDICAL SOCIETY.

President—C. W. Baker, Stanwood.
Secretary—R. A. Nash, Tipton.

Baker, C. W., Stanwood.
Browning, Eli, West Branch.
Chapman, H. R., Bennett.
Leech, L. J., West Branch.
Meyhous, J. H., Sunbury.
Nash, R. A., Tipton.
*Nicoll, D. T., Clarence.
Peters, R. A., Tipton.
Sinning, A., Bennett.
Van Metre, E. J., Tipton.

CERRO GORDO COUNTY MEDICAL SOCIETY.

President—C. H. Smith, Mason City.
Secretary—F. G. Murphy, Mason City.
Delegate—F. G. Murphy, Mason City.

Blaise, T. T., Mason City.
*Colby, M. E., Clear Lake.
Collins, T. S., Burchinal.
Dakin, C. E., Mason City.
*Egloff, W. J., Mason City.
Farrell, V., Mason City.
Hemphill, R. J., Plymouth.
Mason, Stella E., Mason City.
McDonald, J. E., Mason City.
*Murphy, F. G., Mason City.
Smith, C. H., Mason City.
Smith, C. P., Mason City.
*Stockman. G. C., Mason City.

CHEROKEE COUNTY MEDICAL SOCIETY.

President—Chas. Quinn, Meriden.
Secretary—L. A. Wescott, Cherokee.
Delegate—M. N. Voldeng, Cherokee.

Avery, Milo, Aurelia.
Ballah, W. J., Washta.
Biller, J. G., Cherokee.
Brewer, L. S., Quimby.
Bundy, W. C., Aurelia.
*Cleaves, Prentis B., Cherokee.
*Hornibrook, E., Cherokee.
Hostetter, C., Marcus.
McAllaster, B. R., Cherokee.
Quinn, C. F., Meriden.
*Voldeng, M. N., Cherokee.
Wescott, L. A., Cherokee.
Wilhite, O. C., Cherokee.

CHICKASAW COUNTY MEDICAL SOCIETY.

President—Ira K. Gardner, New Hampton.
Secretary—N. Schilling, New Hampton.
Delegate—A. Babcock, New Hampton.

*Babcock, A., New Hampton.
Gardner, P. E., New Hampton.
Gardner, I. K., New Hampton.
Goodale, L. H., Nashua.
Hastings, J. C., Alta Vista.
Hurlbut, Delos, Ionia.
Horton, J. D., Nashua.
*Johnston, E. N., Fredericksburg.
Landon, O. M., New Hampton.
McKone, J. W., Lawler.
Rawlins, Jno. A., Bassett.
*Schilling, N., New Hampton.
*Stuart, P. E., Nashua.
Taylor, L. M., Fredericksburg.
Torpey, J. F., New Hampton.
Wight, W. A., New Hampton.

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CLARKE COUNTY MEDICAL SOCIETY.

President—J. F. Aldrich, Murray.
Secretary—J. L. Millard, Osceola.
Delegate—J. F. Aldrich, Murray.

Aldrich, J. F., Murray.
*Armitage, G. I., Hopeville.
Bowen, F. S., Woodburn.
Hollenbeck, H. L., Osceola.
Millard, J. L., Osceola.
Parrish, W. O., Osceola.
Sells, F. W., Osceola.
Wall, T. M., Osceola.
Walker, C. M., Osceola.
Willey, W. B., Woodburn.

CLAYTON COUNTY MEDICAL SOCIETY.

President—C. W. Duffin, Guttenburg.
Secretary—J. D. Brownson, Monona.
Delegate—L. L. Renshaw, Monona.

Beyer, A. E., Guttenburg.
Blech, G., Guttenburg.
Brant, G. A., Farmersburg.
Brownson, J. D., Monona.
Clark, Alice M., McGregor.
*Clark, H. H., McGregor.
Craig, J. H., Volga City.
Duffin, C. W., Guttenburg.
*Duffin, W. L., Guttenburg.
Everall, B. B., Monona.
Holtfoerster, G.J., Guttenburg.
Kriebs, F. J., Elkport.
Madden, W. D., Volga City.
McGrath, W. J., Elkader.
Miller, W. A., Elkader.
Nicols, C. E., Giard.
Rawson, E. C., Strawberry Pt.
*Renshaw, L. L., Monona.
Schmidt, A. A., Garnavillo.
Sherman, Amelia E., National.
Thomas, W. H., McGregor.
White, G. G., Elkader.

CLINTON COUNTY MEDICAL SOCIETY.

President—Geo. A. Smith, Clinton.
Secretary—E. L. Martindale, Clinton.
Delegate—J. F. H. Sugg, Clinton.

Cook, A. W., Clinton.
Coveny, M. A., Clinton.
Everall, G. L., Clinton.
Everhart, R. E., Clinton.
Farnsworth, P. J., Clinton.
Fairchild, D. S., Jr., Clinton.
Hohenschuh, F. A., Clinton.
Hofstetter, Geo., Clinton.
Hullinger, J. D., Clinton.
Jaenicke, A., Clinton.
Kincaid, Geo. E., Clinton.
Jonsson, C., Clinton.
Kaadt, P. S., Clinton.
Langan, J. E., Clinton.
Lyon, Morton, Clinton.
Martindale, E. L., Clinton.
Moffett, H. C., Clinton.
Milbourne, J. K., Clinton.
Reynolds, H. R., Clinton.
Schermerhorn, G. C., Clinton.
Smith, Geo. A., Clinton.
Sugg, J. F. H., Clinton.
Sugg, Herbert R., Clinton.
Walliker, W. M., Clinton.

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CRAWFORD COUNTY MEDICAL SOCIETY.

President—L. L. Bond, Denison.
Secretary—A. A. Randall, Denison.
Delegate—G. S. Waterhouse, Charter Oak.

Bond, L. L., Denison.
Carr, C. W., Denison.
Mueller, Fred W. Denison.
Randall, A. L., Denison.
Waterhouse, G.S., Charter Oak.

DALLAS-GUTHRIE MEDICAL SOCIETY.

President—F. L. Rogers, Perry.
Secretary—Walter E. Scott, Adel.
Delegate—M. G. Sloan, Dexter.

Aiken, E. R., Perry.
*Ball, Jas. A., Stuart.
*Bower, E. L., Guthrie Center.
*Brewer, Martin T., DeSota.
*Brookings, D. J., Woodward.
Brown, S. J., Panora.
*Butterfield, E. J., Dallas Cent.
*Buxton, Ortho C., Woodward.
*Criley, B. H., Dallas Center.
*Crosby, I. F., Stuart.
Eldridge, R. F., Dawson.
*Fordyce, O., Guthrie Center.
Grossman, D. S., Minburn.
*Harrison, J. W., Guthrie Cent.
Hess, W. C., Bagley.
*Hinshaw, Wm., Dallas Center.
Huston, S. W., Perry.
*Lakin, A. M., Yale.
Mershon, C. E., Adel.
*Moorman, A., Redfield.
*McGrew, W. R., Stuart.
Mower, W. P., Perry.
Pringle, J. A., Bagley.
Rogers, F. L., Perry.
Ross, A. J., Perry.
Shideler, A. B., North Branch.
*Scott, Walter E., Adel.
*Sloan, M. G., Dexter.
*Sones, C. O., Panora.
*Thompson, W. L., Bayard.
*Thornburg, M. W., Redfield.
Treat, Jas., Stuart.
Wolfe, C. E., Guthrie Center.
Williams, W. J., Adel.
*Wright, C. M., DeSota.
Ziegler, D. S., Adel.

DAVIS COUNTY MEDICAL SOCIETY.

President—C. C. Heady, Bloomfield.
Secretary—H. C. Young, Bloomfield.
Delegate—J. Swinney, Bloomfield.

Heady, C. C., Bloomfield.
*Jennings, T. B., Drakeville.
Kimble, Clara, Bloomfield.
Shelton, Chas., Bloomfield.
Shelton, Benard, Pulaski.
Shelton, R. O., Bloomfield.
Stoker, W. B., Drakeville.
Swinney, J., Bloomfield.
Young, H. C., Bloomfield.
*Young, J. Wray, West Grove.

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DECATUR COUNTY MEDICAL SOCIETY.

President—F. A. Bowman, Leon.
Secretary—B. L. Eiker, Decatur.
Delegate—B. L. Eiker, Decatur.

Bowman, F. A., Leon.
Doolittle, E. W., Garden G've.
*Eiker, B. L., Decatur.
*Foxworthy, O. W., Leon.
*Greer, Bertha A., Lamona.
Layton, H. R., Leon.
Lyon, W. E., Garden Grove.
Mitchell, Enos, Weldon.
Snyder, J. F., Weldon.

DELAWARE COUNTY MEDICAL SOCIETY.

President—G. H. Fuller, Delhi.
Secretary—E. H. Dittmer, Manchester.
Delegate—H. M. Bradley, Manchester.

Blanchard, Lewis, Edgewood.
Bradley, C. C., Manchester.
*Bradley, H. M., Manchester.
Burns, Thos. J., Manchester.
Cummings, Lewis, Hopkinton.
Dittmer, M. E., Colesburg.
Dittmer, E. G., Manchester.
Dittmer, H. A., Manchester.
Donnelly, W., Ryan.
Douglas, S. S., Earlville.
Fuller, Geo. H., Delhi.
Hilgendorf, P. J., Hopkinton.
Joyce, Jno. B., Masonville.
Lawrence, H. H., Manchester.
Lindsay, J. J., Manchester.
Livingston, H., Hopkinton.
Newman, M M., Edgewood.
Ramsey, G. W., Masonville.
Rogers, C. B., Earlville.

DICKINSON COUNTY MEDICAL SOCIETY.

President—A. E. Rector, Spirit Lake.
Secretary—E. A. Bare, Superior.
Delegate—E. A. Bare, Superior.

*Bare, E. A., Superior.
Bullock, W. E., Lake Park.
*Fitz, C. G., Spirit Lake.
Rector, A. E., Spirit Lake.
Shultz, Chas. S., Lake Park.
Schooley, A. H., Terril.

DUBUQUE COUNTY MEDICAL SOCIETY.

President—George Minges, Dubuque.
Secretary—James Alderson, Dubuque.
Delegate—J. C. Hancock, Dubuque.

*Alderson, James, Dubuque.
Becker, Wm. L., Dubuque.
*Blockinger, A. H., Dubuque.
*Gratiot, H. B., Dubuque.
Greene, J. H., Dubuque.
Guthrie, J. R., Dubuque.
*Hancock, J. C., Dubuque.
*Kinnier, Lillie, Dubuque.
Maquire, J. E., Dubuque.
Michel, B., Dubuque.
Minges, Geo., Dubuque.
*Odell, Anna, Dubuque.
Slatery, Wm., Dubuque.
Wieland, F. W., Dubuque.

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EMMET COUNTY MEDICAL SOCIETY.

President—C. B. Adams, Estherville.
Secretary—W. E. Bradley, Estherville.
Delegate—C. E. Birney, Estherville.

Adams, Chas. B., Estherville.
*Anderson, A., Estherville.
Bachman, E. W., Estherville.
Birney, C. E., Estherville.
Bossingham, O. N., Ringsted.
Bradley, W. E., Estherville.
*Finlayson, J. A., Armstrong.
*Stinson, Alice C., Estherville.
Wilson, M. E., Estherville.
Woodcock, G. A., Armstrong.

FRANKLIN COUNTY MEDICAL SOCIETY.

President—C. H. Tidd, Geneva.
Secretary—J. C. Powers, Hampton.
Delegate—J. C. Powers, Hampton.

Cragin, H. B., Alexander.
Hobson, A. J., Hampton.
Hoxie, W. E., Hampton.
Hunter, H. S., Sheffield.
Hutchins, J. H., Hampton.
Leach, Walter D., Alexander.
*Powers, J. C., Hampton.
Tidd, C. H., Geneva.
Van Vorhis, J. H., Latimer.

GREENE COUNTY MEDICAL SOCIETY.

President—F. M. Dean, Jefferson.
Secretary—G. W. Kester, Grand Junction.
Delegate—J. W. Presnell, Scranton.

Anderson, H. N., Scranton.
*Arthur, S. H., Scranton.
Cluen, R. J., Paton.
*Dean, F. M., Jefferson.
Enfield, Chas., Jefferson.
*Grimmell, Agusta J., Jefferson.
Grimmell, G. H., Jefferson.
Hoyt, L. F., Jefferson.
*Kester, G. W., Grand Junc.
Kline, S. M., Scranton.
Kirby, S. C., Grand Junction.
Lowery, O. W., Grand Junc.
Presnell, J. W., Scranton.
Shipley, J. H., Rippey.
Young, W. M., Jefferson.

GRUNDY COUNTY MEDICAL SOCIETY.

President—E. A. Crouse, Grundy Center.
Secretary—M. E. Thielen, Grundy Center.
Delegate—E. A. Crouse, Grundy Center.

*Crouse, E. A., Grundy Center.
*Farnham, A. J., Reinbeck.
Harold, A. W., Holland.
*Hathaway, L. B., Reinbeck.
McDowell, W. M., GrundyCen.
*Thielen, M. H., Grundy Cent.

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HAMILTON COUNTY MEDICAL SOCIETY.

President—T. F. Desmond, Webster City.
Secretary—Belle H. Conrad, Webster City.
Delegate—J. B. Tedrow, Williams.

Andrews, S., Webster City.
*Barkalow, D. G., Ellsworth.
Beach, M. A., Stratford.
Conrad, Belle H., Webster C'y.
Crowley, J. M., Webster City.
Desmond, T. F., Webster City.
Hall, O. A., Webster City.
Lewis, Byron, Jewell Junct.
Martin, Eugene, Jewell.
*Pond, A. M., Webster City.
Tedrow, J. B., Williams.
*Wilson, Wm. H., Randall.
Whitley, F. E., Webster City.
*Wyatt, W. W., Kamrar.

HANCOCK COUNTY MEDICAL SOCIETY.

President—H. M. Hoag, Garner.
Secretary—E. A. Couper, Britt.
Delegate—W. S. Groom, Britt.

Carton, A. R., Britt.
Cole, A. J., Britt.
Couper, E. A., Britt.
Frazer, J. E., Garner.
Gilbert, W. L., Goodell.
*Groom, W. S., Britt.
Hoag, H. M., Garner.
Judd, A. L., Kanawha.
Ray, N. D., Woden.
Richter, H. S., Garner.
Schneider, H. T., Garner.
Swindell, Joseph, Garner.
Van Dyke, J. A., Corwith.

HARDIN COUNTY MEDICAL SOCIETY.

President—W. P. Burke, Iowa Falls.
Secretary—W. E. Whitney, Eldora.
Delegate—E. O. Koeneman, Eldora.

Burke, E. W., Iowa Falls.
Jones, E. H., Eldora.
*Koeneman, E. O., Eldora.
Lewis, W H., Aldon.
Morse, N. C., Eldora.
*Morton, Wm. M., Iowa Falls.
Petersen, D. Hans, Radcliffe.
Phelan, L., Ackley.
Whitney, Wm. E., Eldora.

HARRISON COUNTY MEDICAL SOCIETY.

President—I. C. Wood, Logan.
Secretary—Geo. F. Shiley, Missouri Valley.
Delegate—I. C. Wood, Logan.

*Caldwell, S. A., Little Sioux.
Coit, G. W., Mo. Valley.
Cole, E. J., Woodbine.
Findley, W. G., Mondamin.
Gasson, J. H., Mo. Valley.
Hanson, F H., Magnolia.
Jones, J. D., Logan.
Kennedy, C. S., Logan.

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*Knowles, J., Logan.
Macfarlane, T., Mondamin.
McGavren, C. W., Mo. Valley.
Mechan, J. J., Mo. Valley.
O'Conner, W. E., Woodbine.
Shiley, W. G., Mondamin.
Tamisiea, J. L., Mo. Valley.
Tamisiea, J. H., Mo. Valley.
Williams, D., Logan.
Wood, I. C., Logan.

HENRY COUNTY MEDICAL SOCIETY.

President—J. M. Evans, Salem.
Secretary—W. S. Lessenger, Mt. Pleasant.
Delegate—F. C. Mehler, New London.

Caldwell, E. J., Salem.
Carter, C. W., Rome.
*Cook, E. C., New London.
Day, J. N., Mt. Pleasant.
Dilts, W A., Salem.
Evans, J. M., Salem.
Gardner, C. W., Winfield.
Geeseka, O. A., Mt. Pleasant.
Gilfillan, H. J., Mt. Pleasant.
Howell, W. S., Trenton
*Lessenger, W.S., Mt. Pleasant.
*Mason, Geo. T., Trenton.
Mehler, F. C., New London.
*Mehler, F. R., New London.
McConnaughey, J.M., Wayland
*Peterson, A. H., Swedesburg.
Peterson, E.H.S., Swedesburg.
Pitcher, A. O., Mt. Pleasant.
Pittman, C. W., Salem.
Sternburg, W. A., Mt.Pleasant.
Stevens, F. P., Mt. Pleasant.
VanAusdall, G. M., N. London.
*Wilson, F. R., New London.

HOWARD COUNTY MEDICAL SOCIETY.

President—Chas. D. Roome, Cresco.
Secretary—Eliz. A. Almond, Cresco.
Delegate—Geo. Kessell, Cresco.

Ahern, J. J., Cresco.
Almond, Eliz. A., Cresco.
Barrett, J. A., Cresco.
Connolly, Wm., Cresco.
Daly, Wm. T., Cresco.
Freemire, Frank, Chester.
Gillespie, H. N., Elma.
Jinderlee, J. W., Cresco.
Kessell, George, Cresco.
Mulick, James, Elma.
Roome, Chas. D., Cresco.
Simons, D. P., Lime Springs.
Scripture, J. L., Cresco.

HUMBOLDT COUNTY MEDICAL SOCIETY.

President—U. G. Grigsby, Humboldt.
Secretary—H. C. Doan, Humboldt.
Delegate—H. P. Hall, Renwick.

Arent, A., Humboldt.
Coddington, J. R., Humboldt.
*Doan, H. C., Humboldt.
Graham, D. E., Bradgate.
Grigsby, U. G., Humboldt.
Hall, H. P., Renwick.
Malin, E. C., Livermore.
Shipley, W. M., Ottosen.
Welch, F. E., Rutland.

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IDA COUNTY MEDICAL SOCIETY.

President—E. C. Heilman, Ida Grove.
Secretary—J. E. Conn, Ida Grove.
Delegate—Carl E. Conn, Battle Creek.

Bilby, A. M., Galva.
Conn, J. E., Ida Grove.
Cole, F. M., Battle Creek.
Conn, C. E., Battle Creek.
Crane, G. H., Holstein.
Farnsworth, D. W., Galva.
Heilman, E. C., Ida Grove.
Heilman, E. S., Ida Grove.
Houlihan, T. J., Ida Grove.
Jones, H. D., Battle Creek.
Karterman, M. R., Ida Grove.
*Moorehead, G. C., Ida Grove.

IOWA COUNTY MEDICAL SOCIETY.

President—A. C. Moon, Williamsburg.
Secretary—E. B. Henderson, Marengo.

Henderson, E. B., Marengo.
Herrmann, C. H., Middle Amana.
Noe, C. F., Amana.
Shuell, T. J., Parnell.

JACKSON COUNTY MEDICAL SOCIETY.

President—Geo. M. Johnson, Maquoketa.
Secretary—J. O. Ristine, Maquoketa.
Delegate—D. N. Loose, Maquoketa.

*Bowen, A. B., Maquoketa.
Johnson, F. V., Maquoketa.
Johnson, G. M., Maquoketa.
*Loose, D. N., Maquoketa.
Marner, W. A., Miles.
Post, Wm., Maquoketa.
Ristine, J. O., Maquoketa.
Ritter, J. F., Maquoketa.

JASPER COUNTY MEDICAL SOCIETY.

President—L. C. S. Turner, Colfax.
Secretary—H. P. Engle, Newton.
Delegate—C. E. Boyd, Newton.

*Besser, E. F., Newton.
*Boyd, C. E., Newton.
Carpenter, L. J., Sully.
Carpenter, F., Galesburg.
*Engle, H. P., Newton.
Engle, Perry, Newton.
Gearhart, N. B., Colfax.
Graham, C. C., Baxter.
Goodrich, W. W., Mingo.
Harsh, G. N., Baxter.
Leonard, F. C., Newton.
Marten, J. N., Seevers.
*McConnaughey, W. D., Prairie City.
Quire, C. E., Sully.
Robb, E. H., Newton.
*Smead, L. L., Reasnor.
*Smead, C. C., Newton.
*Smith, F. L. M., Monroe.
Taylor, J. L., Monroe.
*Turner, L. C. S., Sully.

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JEFFERSON COUNTY MEDICAL SOCIETY.

President—S. K. Davis, Libertyville.
Secretary—A. S. Hague, Fairfield.
Delegate—S. K. Davis, Libertyville.

Bailey, C W., Pleasant Plain.
Bishop, C. S., Glasgow.
Carpenter, M. C., Fairfield.
*Clarke, J. F., Fairfield.
*Davis, S. K., Libertyville.
Fordyce, W., Fairfield.
Gabbert, B. F., Batavia.
Grove, E. C., Fairfield.
Hague, A. S., Fairfield.
Hayden, J. W., Fairfield.
Morrow, A. M., Salina.
Sloan, N. A., Fairfield.
Snook, C., Fairfield.
Stephenson, R. B., Libertyville.
Tallman, C. C., Fairfield.

JOHNSON COUNTY MEDICAL SOCIETY.

President—W. L. Bierring, Iowa City.
Secretary—J. A. Valenta, Iowa City.
Delegate—J. B. Kessler, Iowa City.

Albert, Henry, Iowa City.
Branson, Laura B., Iowa City.
Burge, A. J., Iowa City.
Day, G. L., Lone Tree.
Dean, L. W., Iowa City.
Doty, E. A., Oxford.
Hetzel, C. C., Iowa City.
Kessler, J. B., Iowa City.
Littig, L. W., Iowa City.
McClintock, Jno., Iowa City.
Mullin, J. P., Iowa City.
Valenta, J. A., Iowa City.
Whiteis, W. R., Iowa City.

JONES COUNTY MEDICAL SOCIETY.

President—W. B. Brock, Olin.
Secretary—H. W. Sigworth, Anamosa.
Delegate—A. G. Hejinian, Anamosa.

Brock, W. B., Olin.
Bobo, L. K., Oxford Junction.
Chamberlain, B. H., Wyoming.
Davies, J. E., Oxford Junc.
Gorman, T. C., Anamosa.
Gilmore, J. E., Monticello.
Hejinian, A. G., Anamosa.
Hunter, W. W., Monticello.
Inglis, Geo., Monticello.
King, G. E., Anamosa.
Knittle, E. H., Onslow.
Kent, T. B., Center Junction.
Mirick, W. A., Monticello.
Port, F. W., Olin.
Richards, J. W., Center Junc.
Sigworth, H. W., Anamosa.
Sigworth, F. B., Anamosa.
Spencer, R. H., Wyoming.
Thomas, J. G., Monticello.
Weinland, J. G., Martelle.
White, J. A., Olin.
Young, J. M., Anamosa.

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KEOKUK COUNTY MEDICAL SOCIETY.

President—Wm. Pfannebecker, Sigourney.
Secretary—Chas. A. Trumbauer, Keota.
Delegate—Wm. Pfannebecker, Sigourney.

Duffey, E. A., Hayesville.
Henry, R. V., Hedrick.
Jarvis, Fred, Delta.
Moore, M. F., Hedrick.
Oliver, L. B., Sigourney.
*Payne, Jno. E., Richland.
*Payne, R. H., Richland.
Pfannebecker, W., Sigourney.
Taylor, C. B., What Cheer.
Trumbauer, C. A., Keota.
Williams, J. C., What Cheer.

KOSSUTH COUNTY MEDICAL SOCIETY.

President—F. T. Seeley, Algona.
Secretary—C. H. Cretzmeyer, Algona.
Delegate—W. T. Peters, Burt.

Cretzmeyer, C. H., Algona.
Fellows, C. D., Algona.
Gay, E. J., Algona.
Heinen, W. C., Whittemore.
Janse, P. V., Luverne.
Kenefick, M. J., Algona.
Logan, F. W., Fenton.
*Morse, W. E. H., Algona.
McCreery, J. W., Whittemore.
Packard, C. W., Titonka.
*Peters, W. T., Burt.
Stull, T. H., Algona.
Sultz, C. R., Algona.

LOUISA COUNTY MEDICAL SOCIETY.

President—W. R. Symth, Morning Sun.
Secretary—S. J. Lewis, Columbus City.
Delegate—W. S. Grimes, Wapello.

*Chittum, J. H., Wapello.
Ditto, R. C., Oakville.
Graham, D. Y., Morning Sun.
*Grimes, W. S., Wapello.
Overholt, J. L., Col. Junction.
Higley, D. J., Grandview.
Hubbard, F. A., Col. Junction.
Lewis, S. J., Columbus City.
McClellan, W.S., Morning Sun.
Morgan, J. W., Muscatine.
*Rogers, A. M., Wapello.
Smyth, W. R., Morning Sun.

LEE COUNTY MEDICAL SOCIETY.

President—F. C. Roberts, Ft. Madison.
Secretary—John Downs, Ft. Madison.
Delegate—W. G. Doern, Ft. Madison.

Atkinson, J., Donnelson.
Bailey, B. F., Keokuk.
Bertram, Pauline, Keokuk.
Buck, E. M., Montrose.
Casey, J. M., Ft. Madison.
Chapman, E. C., Ft. Madison.
Collins, Samuel, Montrose.
Coulter, J. H., Summitville.

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DeVilbiss, Georgiana, W. Pt.
DeVilbiss, J. W., West Point.
Dickson, J. P., Franklin.
*Doern, W. G., Ft. Madison.
Dorsey, F. B., Keokuk.
Downs, John, Ft. Madison.
Fuller, F. M., Keokuk.
Grimwood, W.H., Ft. Madison.
Hogle, W. M., Keokuk.
Holmes, W. W., Keokuk.
Hughes, A. B., Keokuk.
Jenkins, G. F., Keokuk.
*Jones, George W., Keokuk.
Kasten, W. C., Ft. Madison.
Kinneman, H. H., Keokuk.
Lapsley, R. M., Keokuk.
Maxwell, T. J., Keokuk.
*Maxwell, J. R., Keokuk.
McCoy, Jessie, Ft. Madison.
McKaig, R. F., Weaver.
Newlon, W. H., Ft. Madison.
Newton, D. L., Ft. Madison.
Neal, Geo. P., Ft. Madison.
Ochiltree, V. B., Keokuk.
Philpott, J. W., Ft. Madison.
Richmond, A. C., Ft. Madison.
Roberts, F. C., Ft. Madison.
Rider, A. S., Keokuk.
*Ruth, C. E., Keokuk.
*Scroggs, J. A., Keokuk.
*Sisson, E. O., Keokuk.
Sloat, W. E., Denmark.
Stewart, C. E., Charleston.
Traverse, I. W., Ft. Madison.
*Wahrer, C. F., Ft. Madison.
Walker, O D., Keokuk.
Washburn, T. R., Donnelson.
Wedel, J. R., Vincennes.

LINN COUNTY MEDICAL SOCIETY.

President—W. Woodbridge, Central City.
Secretary—H. W. Bender, Cedar Rapids.
Delegate—G. R. Skinner, Cedar Rapids.

Bender, H. W., Cedar Rapids.
Bradley, W. J., Cedar Rapids.
Burd, Edwin, Lisbon.
Byerly, A. J., Coggon.
Carhart, G. L., Marion.
Carpenter, G.P., Cedar Rapids.
Coulter, A. B., Cedar Rapids.
Crawford, J. L., Cedar Rapids.
Crawford, A., Mt. Vernon.
Crawford, G. E., Cedar Rapids.
Dalbey, Jas. W., Cedar Rapids
French, W. H., Cedar Rapids.
Gardner, J. R., Lisbon.
Gearhart, G. W., Springville.
Graham, J. D., Springville.
*Hamilton, John, Cedar Rapids.
*Hogle, Kate M., Mt. Vernon.
Hubbard, C. W., Atkins.
Jicinsky, J. R., Cedar Rapids.
Johnson, A. H., Cedar Rapids.
Kegley, E. A., Cedar Rapids.
King, W. S., Cedar Rapids.
Krejci, Oldrich, Cedar Rapids.
LaGrange, J. W., Springville.
Lawler, E. L., Cedar Rapids.
Lee, J. A., Lisbon.
Lord, Richard, Cedar Rapids.
Love, J. S., Springville.
McConkie, J. J., Cedar Rapids.
McConkie,W.A., CedarRapids:
Morrison, W. J., Cedar Rapids.
Murphy, J. J., Cedar Rapids.
Murray, F. G., Cedar Rapids.
Myers, J. F., Lisbon.
Neal, Emma, Cedar Rapids.
Neff, Mary L., Cedar Rapids.
Netolicky, W. J., W. College.
Petrovitsky, J. C., C. Rapids.
Poore, A. B., Cedar Rapids.
Raymer, H. S., Cedar Rapids.
Richardson, J. F., Fairfax.
*Ristine, J. M., Cedar Rapids.

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Robinson, J. B., Mt. Vernon.
Ruml, W., Cedar Rapids.
Sargent, F. L., Marion.
Scofield, A. H., Coggon.
Skinner, Frank S., Marion.
Skinner, G. R., Cedar Rapids.
Skinner, G. C., Cedar Rapids.
Spicer, S. S., Cedar Rapids.
Stansbury, G. W.. W. College.
Sweet, P. W., Cedar Rapids.
Walker, H. L., Cedar Rapids.
Webb, M. Sula, Cedar Rapids.
*Woodbridge, W., Central City.
Woodruff, L. F., Cedar Rapids.
York, M. A., Lisbon.
Zalesky, W. J., Cedar Rapids.

LUCAS COUNTY MEDICAL SOCIETY.

President—A. L. Yocum, Chariton.
Secretary—Jno. H. Stanton, Chariton.
Delegate—H. H. Nelson, Russell.

Buzzard, I. S., Russell.
Field, E. L., Chariton.
Nelson, H. H., Russell.
Stanton, T. P., Chariton.
Stanton, J. E., Chariton.
Stanton, Jno. H., Chariton.
Stratton, Mary A., Cleveland.
Storie, D. Q., Chariton.
*Throckmorton, T.M., Chariton.
Throckmorton, R. F., Derby.
Yocum, A. L., Chariton.

LYON COUNTY MEDICAL SOCIETY.

President—Z. T. Holtsclaw, Larchwood.
Secretary—W. T. Schwabland, Lester.
Delegate—W. T. Schwabland, Lester.

Bartine, W. W., Rock Rapids.
Blair, S. E., Alvord.
Boslaugh, E. W., George.
Brink, H. J., Doon.
Brott, J. F., Doon.
*Cottam, G. G., Rock Rapids.
Elliott, E. W., Little Rock.
Holtsclaw, Z. T., Larchwood.
Lewis, D. W., Inwood.
McNab, A., Rock Rapids.
McKinney, O. B., George.
North, J. E., Rock Rapids.
*Schwabland, W. T., Lester.

MONROE COUNTY MEDICAL SOCIETY.

President—H. C. Eschbach, Albia.
Secretary—Sue B. Gantz, Albia.
Delegate—H. C. Eschbach, Albia.

Avery, Thos. J., Hiteman.
Cross, J. R., Foster.
*Eschbach, H. C., Albia.
Gantz, Sue B., Albia.
Gray, S. T., Albia.
*Gray, Jno. F., Hilton.
Gutch, Earnest, Albia.
Hyatt, C. N., Albia.
*Jackson, T. R., Hocking
Jenkins, Allen, Hocking.

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King, S. M., Albia.
*McFall, W. O., Hiteman.
*Nye, H. W., Lovila.
Powell, Burke, Albia.
Powell, C B., Albia.
*Riordan, M. F., Melrose.
*Robb, Robt., Hiteman.
Robb, W. A. G., Hiteman.
White, E. E., Lovilla

MONTGOMERY COUNTY MEDICAL SOCIETY.

President—A. Carson, Elliott.
Secretary—W. A. Lomas, Villisca.
Delegate—Lewis A. Thomas, Red Oak.

Ashby, A. A., Red Oak.
Carson, A., Elliott.
Chiles, J. H., Villisca.
Hine, C. W., Stanton.
Lomas, W. A., Villisca.
McNaughton, M. N., Villisca.
Nicol, J. H., Villisca.
Reiley, W. S., Red Oak.
Smith, R., Red Oak.
Thomas, L. A., Red Oak.
West, W. W., Villisca.
Williams, F. S., Villisca.

MUSCATINE COUNTY MEDICAL SOCIETY.

President—H. M. Dean, Muscatine.
Secretary—T. F. Beveridge, Muscatine.
Delegate—F. H. Little, Muscatine.

Appel, F. L., Muscatine.
*Beveridge, T. F., Muscatine.
Braunworth, E. L., Muscatine.
Bierring, W. L., Iowa City.
Cooling, W. A., Wilton.
Dean, H. J., Muscatine.
*Dean, H. M., Muscatine.
Durkee, R. W., Muscatine.
Fulliam, J. D., Muscatine.
Heidel, G. A., Muscatine.
Klein, J. L., Muscatine.
*King, E. H., Muscatine.
Kimball, C. B., West Liberty.
Leith, A. R., Wilton.
Little, F. H., Muscatine.
Mason, H. P., Wilton.
Morgridge, G. L., Muscatine.
Miller, D. P., Muscatine.
Norton, W. S., Muscatine.
Oliver, A. J., Muscatine.
Reppert, L., Muscatine.
Schmidt, F. E., Muscatine.
*Tyler, E. K., Muscatine.
Weaver, A. J., Muscatine.
Wyant, O. B., West Liberty.

MADISON COUNTY MEDICAL SOCIETY.

President—S. N. Sayre, St. Charles.
Secretary—W. H. Thompson, Winterset.
Delegate—Ed. Embree, Winterset.

Anderson, E. K., St. Charles.
*Bush, F. W., Pitzer.
Davisson, R. R., Winterset.
*Embree, Ed., Winterset.
Hutchison, J. A., Pitzer.
Little, B. D., Patterson.
Roberts, Thos., St. Charles.
Sayre, S. N., St. Charles.
*Skinner, G. N., Winterset.
Smith, Jessie V., Winterset.
*Thompson, W. H., Winterset.

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MARION COUNTY MEDICAL SOCIETY.

President—C. P. Cook, Otley.
Secretary—C. W. Cornell, Knoxville.
Delegate—B. F. Keables, Pella.

Allen, W. L., Pella.
Anderson, J. W., Bussey.
*Ardery, Mary D., Knoxville.
Axline, W. H., Attica.
Baron, H. S., Pella.
Bell, E. P., Pleasantville.
*Brann, J. V., Knoxville.
*Cook, C. P., Otley.
Cornell, C. W., Knoxville.
Finarty, J. W., Knoxville.
*French, Ada M., Pella.
Fuqua, W. M., Pella.
Halloway, Jno. G., Bussey.
Harrington, C. M., Knoxville.
*James, C. E., Durham.
*Keables, B. F., Pella.
Kramer, M., Pella.
Miller, J. L., Pleasantville.
*McClure, E. C., Bussey.
McDonald, E. J., Marysville.
Mulky, C., Knoxville.
Noble, C. W., Dallas.
*Park, L. E., Tracy.
*Payne, H. C., Pella.
Pitts, C. D., Dallas.
*Sandy, A. A., Harvey.
*Spates, C. B., Knoxville.
Thomas, S. W., Newburn.
Thompson, C. C., Bussey.
Viersen, H. H., Pella.
*Worstell, G., Knoxville.

MARSHALL COUNTY MEDICAL SOCIETY.

President—N. E. Mighell, Marshalltown.
Secretary—W. S. Devine, Marshalltown.
Delegate—C. C. Cottle, Marshalltown.

Burroughs, E.S., Marshalltown.
Choat, Cora W., Marshalltown.
*Cottle, C. C., Marshalltown.
Duffield, S. H. P., Marshallt'n.
Devine, W. S., Marshalltown.
*Getz, H. L., Marshalltown.
Getz, N. W., Marshalltown.
*Kierulff, B. F., Marshalltown.
Merrill, N., Marshalltown.
Mighell, N. E., Marshalltown.
Singleton, E. M., Marshallto'n.
Sweet, Robt. B., Marshalltown.

MILLS COUNTY MEDICAL SOCIETY.

President—C. H. DeWitt, Glenwood.
Secretary—R. B. Tubbs, Emerson.
Delegate—C. H. DeWitt, Glenwood.

Agan, G. M., Silver City.
Bacon, L. B., Pacific Junct.
*Benson, H. W., Glenwood.
Brunig, H., Mineola.
Campbell, S. A., Malvern.
Craig, W. D., Henderson.
*DeWitt, C. H., Glenwood.
Donelan, W. E., Glenwod.
Hester, F. E. L., Glenwood.
Lyon, C. R., Glenwood.
McCue, J. G., Silver City.
Mogridge, Geo., Glenwood.
Moore, R. A., Silver City.
Parsons, I. U., Malvern.
Schier, A. R., Glenwood.
Tubbs, R. B., Emerson.
Whitnall, W. R., Hastings.

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MONONA COUNTY MEDICAL SOCIETY.

President—J. W. Huff, Onawa.
Secretary—E. E. Fisher, Rodney.
Delegate—J. W. Huff, Onawa.

Allison, A. L., Blencoe.
Fisher, E. E., Rodney.
Gillespie, H. S., Mapleton.
Gingles, W. W., Castana.
Harmon, R., Onawa.
*Huff, J. W., Onawa.
Kerlin, J. D., Whiting.
Minthorne, M. F., Castana.
Moore, A. J., Onawa.
Rust, D., Whiting.
Stewart, C E., Moorehead.
Talboy, J. H., Mapleton.
Wengert, H. C., Mapleton.
West, A. A., Moorehead.
Williams, W., Mo. Valley.

O'BRIEN COUNTY MEDICAL SOCIETY.

President—F. E. Brown, Primghar.
Secretary—C. B. Rentz, Sanborn.
Delegate—D. T. Stewart, Hartley.

Brock, W. R., Sheldon.
Brown, F. E., Primghar.
Bushby, A. L., Primghar.
*Cram, F. W., Sheldon.
Dudley, E., Paullina.
Little, W. G., Sanborn.
*Louthan, B. S., Sutherland.
Murphy, S. W., Sheldon.
Myers, W. H., Sheldon.
*Parker, E. W., Sutherland.
Rentz, Chas. B., Sanborn.
*Scott, H., Paullina.
*Stewart, D. T., Hartley.

OSCEOLA COUNTY MEDICAL SOCIETY.

President—W. E. Ely, Ocheydan.
Secretary—F. J. Langenhorst, Ashton.
Delegate—H. Neill, Sibley.

Ely, W. E., Ocheydan.
Hamilton, R. G., Ocheydan.
Heetland, L. H., Sibley.
Hough, Frank, Sibley.
Langenhorst, F. J., Ashton.
Maker, L. E., Sibley.
Neill, Hiriam, Sibley.

PAGE COUNTY MEDICAL SOCIETY.

President—J. A. Gillespie, Coin.
Secretary—C. F. Perkins, Shenandoah.
Delegate—T. E. Powers, Clarinda.

Boody, Geo., Clarinda.
Dodds, R. J. C., Blanchard.
Driver, F. J., Shenandoah.
George, M. R., College Spgs.
Gillespie, J. A., Coin.
Kellogg, C. E., Northboro.

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King, A. H., Coin.
*Mathews, R. J., Clarinda.
Parriott, C. C., Yorktown.
Perkins, C. F., Shenandoah.
Powers, T. E., Clarinda.
Pruitt, G. A., Blanchard.
Smith, G. L., Shenandoah.
Sutton, R. H., Shenandoah.
Swanson, J. E., Essex.
Wherry, J. W., Clarinda.

PALO ALTO COUNTY MEDICAL SOCIETY.

President—F. Hunter, Emmetsburg.
Secretary—J. L. Van Gordon, Emmetsburg.
Delegate—G. Baldwin, Ruthven.

Adams, F. L., Cerlew.
Baldwin, G., Ruthven.
Hunter, Fred, Emmetsburg.
Beatty, E. D., Mallard.
Boody, Frank D., West Bend.
Buehler, J. W., Ruthven.
Burdick, A. E., Graettinger.
Burnard, H. W., Emmetsburg.
Huston, H. M, .Ruthven.
O'Brien, T. A., Emmetsburg.
Powers, H. A., Emmetsburg.
Van Gorden, J. L., Emmetsb'g.
Woodbridge, J. W., Cylinder.

PLYMOUTH COUNTY MEDICAL SOCIETY.

President—M. W. Richey, LeMars.
Secretary—G. H. Mammen, LeMars.
Delegate—P. L. Brick, LeMars.

*Breen, Mary A., LeMars.
Brick, P. L., LeMars.
Cole, T. E., LeMars.
Foster, R. H., LeMars.
Heller, W. H., Remsen.
Jastram, A. H., Remsen.
Kueny, C. F., LeMars.
Mammen, C. F., LeMars.
Reeves, J. L., LeMars.
Richey, M. W., LeMars.
Rippey, J. H., Kingsley.
Somers, R. H., LeMars.
Wilder, J. J., Kingsley.
Wright, H. J., Kingsley.
Wuesthoff, L. W., Struble.

POCAHONTAS COUNTY MEDICAL SOCIETY.

President—A. L. Belt, Gilmore City.
Secretary—E. W. Wilson, Rolfe.
Delegate—A. L. Belt, Gilmore City.

*Barthel, O. H., Pocahontas.
Beam, W. W., Rolfe.
Belt, A. L., Gilmore City.
Carroll, J. M., Laurens.
Higgins, J. W., Laurens.
Hovenden, J. H., Laurens.
MacManus,F.W., Gilmore C'y.
*Starr, J. W., Pocahontas.
Smillie, B. A., Palmer.
Thornton, A. H., Pocahontas.
Wilson, E. W., Rolfe.

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POWESHIEK COUNTY MEDICAL SOCIETY.

President—E. W. Clark, Grinnell.
Secretary—P. E. Somers, Grinnell.
Delegate—E. W. Clark, Grinnell.

*Buck, S. C., Grinnell.
Busby, C. D., Brooklyn.
Busby, I. N., Brooklyn.
*Clark, E. W., Grinnell.
Conaway, C. D., Brooklyn.
Wilcox, Delano, Malcolm.
*Hedges, T. M., Grinnell.
Lewis, Jas. R., Grinnell.
*Sherman, A. M., Grinnell.
*Somers, Pearl E., Grinnell.
Parish, Ora F., Grinnell.
Talbott, E. F., Grinnell.
Wetmore, J., Grinnell.
*Williams, E. B., Montezuma.

POLK COUNTY MEDICAL SOCIETY.

President—E. Luther Stevens, Des Moines.
Secretary—Lenna L. Means, Des Moines.
Delegates—D. S. Fairchild and J. T. Priestley, Des Moines.

Amos, A. R., Des Moines.
*Anderson, A. A., Des Moines.
*Bice, D. C., Des Moines.
*Bufkin, C. W., Des Moines.
*Callahan, B. J., Des Moines.
Carpenter, W. S., Des Moines.
*Cokenower, J. W., Des Moines.
*Conkling, W. S., Des Moines.
Cramer, Roland, Des Moines.
*Davis, F. C., Des Moines.
Delander, Chas., Des Moines.
*Dorr, E. E., Des Moines.
*Emery, H. G., Des Moines.
*Ely, F. A., Des Moines.
*Fay, J., Des Mines.
*Fairchild, D. S., Des Moines.
*Finlayson, D. W., Des Moines.
*Flannery, J. J., Des Moines.
*Fosnes, Edith G., Des Moines.
*Fowler, C. C., Des Moines.
*Frisbie, Chas. B., Des Moines.
*Frisbie, Evelyn, Des Moines.
*Gray, H. D., Des Moines.
*Grimes, Eli, Des Moines.
*Guild, W. A., Des Moines.
*Hanawalt, G. P., Des Moines.
*Hibbs, G. B., Mitchville.
*Hill, G. H., Des Moines.
*Hoffman, C., A., Des Moines.
*Keables, H. T., Des Moines.
*Kelleher, T. F., Des Moines.
*King, A. D., Des Moines.
Kitterman, P. G., Des Moines.
*McCarthy, W.W., Des Moines.
McKitrick, J. F., Des Moines.
*Means, Lenna L., Des Moines.
*Minassian, H. A., Des Moines.
*Osborne, J. W., Des Moines.
*Page, A. C., Des Moines.
*Paul, C. B., Des Moines.
Peacock, A. L., Grimes.
Patterson, M. F., Des Moines.
Porter, L., Bondurant.
*Potter, H. C., Des Moines.
Parriott, R. B., Des Moines.
Priestley, Crayke, Des Moines.
Priestley, J. T., Des Moines.
*Pearson, W. W., Des Moines.
Rawson, C. D., Des Moines.
Rockafellow, C., Des Moines.
Rood, L. D., Des Moines.
*Ryan, G. N., Des Moines.
Scott, Clifton, Des Moines.
*Scott, S. H., Des Moines.

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Shively, J. D., Des Moines.
*Shore, F. E. V., Des Moines.
*Smith, C. F., Des Moines.
*Sheuer, M. M., Valley Junct.
*Smouse, D. W., Des Moines.
*Smouse, W. O., Des Moines.
Spain, R. T., Des Moines.
Steelsmith, F. F., Des Moines.
*Stevens, E. L., Des Moines.
Stevenson, Wm., Des Moines.
Stewart, G., Des Moines.
*Stoner, A. P., Des Moines.
*Turner, M. L., Des Moines.
*Tyrrell, J. W., Des Moines.
*Van Werden W., Des Moines.
*Watts, R. F., Des Moines.
*Wells, F. L., Des Moines.
Welpton, H. G., Des Moines.
*Werts, C. M., Des Moines.
*Willett, H. C., Des Moines.
Wiley, E. D., Des Moines.

LIFE MEMBERS.

Hazen, E. H., Des Moines.
Field, A. G., Des Moines.
Kennedy, J. F., Des Moines.
Skinner, J. O., Des Moines.

POTTAWATTAMIE COUNTY MEDICAL SOCIETY.

President—W. F. Pierce, Carson.
Secretary—F. W. Dean, Council Bluffs.
Delegate—H. B. Jennings, Council Bluffs.

Augustine, G., Minden.
Barstow, J. M., Council Blffs.
Bellinger, F. E., Council Blffs.
Bellinger, M. J., Council Blffs.
*Besore, W. M., Macedonia.
Christensen, M. C., Co. Blffs.
*Cleaver, J. H., Council Blffs.
Cole, J. H., Council Bluffs.
Dean, F. W., Council Bluffs.
Deetkin, H. C., Treynor.
Dietz, C. F., Carson.
Doyle, J. M., Neola.
Emmert, D. F., Avoca.
Erickson, C. S., Council Blffs.
Frazier, J. W., Honey Creek.
Green, W. M., Council Blffs.
Hombach, W.P., Council Blffs.
Houghton, F. W., Co. Blffs.
Hemsted, J. W., Griswold.
*Jennings, H. B., Council Blffs.
Kuhl, A. B., Walnut.
*Macrae, D., Council Bluffs.
*Macrae, D., Jr., Council Blffs.
Michell, A. B., Council Blffs.
Pierce, W. F., Carson.
Rice, N. J., Council Bluffs.
Robertson, A. A., Crescent.
*Seybert, F. T., Council Blffs.
Shaffer, C. J., Carson.
Smith, R. G., Oakland.
Spaulding, G. A., Avoca.
Spencer, H. D., Oakland.
Stempel, G., Macedonia.
Stephenson, A. V., Oakland.
Stevens, A. S., Hancock.
Tinley, M. L., Council Blffs.
Tinley, M. A., Council Blffs.
Tobey, S. D., Oakland.
*Treynor, V. L., Council Blffs.
Van Ness, I. T., Neola.
*Waterman, J. C., Council Blffs.
Wyland, A. O., Underwood.

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RINGGOLD COUNTY MEDICAL SOCIETY.

President—B. B. Waring, Maloy.
Secretary—S. Bailey, Mt. Ayr.
Delegate—S. Bailey, Mt. Ayr.

*Armitage, A. C., Ellston.
*Bailey, S., Mt. Ayr.
Coontz, J. S., Kellerton.
Fullerton, O. L., Redding.
Greenman, J. W., Kellerton.
Horne, Wm., Mt. Ayr.
King, A. E., Blockton.
*Lesan, C. T., Mt. Ayr.
*Maxwell, J. P., Clearfield.
Waring, B. B., Maloy.

SAC COUNTY MEDICAL SOCIETY.

President—Thos. Farquhar, Early.
Secretary—F. H. McCray, Schaller.
Delegate—W. J. Findley, Sac City.

Brenton, A. T., Sac City.
Farquhar, E. M., Early.
Farquhar, Thos., Early.
*Findley, W. J., Sac City.
Fuller, Z., Sac City.
Graham, J. W., Early.
Herrick, W. Y., Lytton.
McCray, F. H., Schaller.
Stalford, J. H., Sac City.
*Townsend, W. H., Sac City.

STORY COUNTY MEDICAL SOCIETY.

President—E. A. Rawson, Slater.
Secretary—H. D. Chamberlin, Nevada.
Delegate—H. D. Chamberlin, Nevada.

Chamberlin, H. D., Nevada.
Dyer, B. G., Ames.
*Ghrist, D. M., Ames.
Ghrist, Jennie, Ames.
Hostetter, J. I., Colo.
*Joor, P., Maxwell.
McCord, E. S., Ames.
McWilliam, C., Ames.
Rawson, E. A., Slater.
Richmond, A., Nevada.
*Smith, F. S., Nevada.

SHELBY COUNTY MEDICAL SOCIETY.

President—N. Jasper Jones, Shelby.
Secretary—F. H. Allen, Shelby.
Delegate—E. L. Cook, Harlan.

Allen, F. H., Shelby.
Baer, T. H., Defiance.
*Bisgard, James, Harlan.
Cassidy, Geo. A., Shelby.
Cobb, E. A., Harlan.
*Cook, E. L., Harlan.
Heilesen, Mary A., Elkhorn.
Jones, N. Jasper, Shelby.
Meyer, V. J., Portsmouth.
*Sabin, A. E., Kirkman.
*Smith, E. J., Harlan.
Sterck, Prudens, Earling.

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SIOUX COUNTY MEDICAL SOCIETY.

President—A. DeBey, Orange City.
Secretary—C. S. McCarty, Hawarden.
Delegate—N. G. O. Coad, Hull.

Beyer, H., Sioux Center.
Brink, M., Boyden.
Coad, N. G. O., Hull.
DeBey, A., Orange City.
DeLong, C., Orange City.
DeLespinasse, H., Orange C'y.
DeLespinasse, G. F. A., Orange City.
DePree, S. B., Sioux Center.
DunVan, E. K., Chatsworth.
Galman, J. J., Hosper
Huizenga, F. J., Rock Valley.
Lass, D. G., Hull.
McAllister, F. J., Hawarden.
McCarty, C. S., Hawarden.
Oggle, H. D., Maurice.
Quigley, A. A., Hawarden.
Ream, W. R., Granville.
Smith, F. J., Alton.
Werkman, D. J., Hull.

SCOTT COUNTY MEDICAL SOCIETY.

President—W. L. Allen, Davenport.
Secretary—J. McCarthy, Davenport.
Delegate—J. H. Kulp, Davenport.

Allen, W. L., Davenport.
Bailey, W. W., LeClaire.
Baker, J. W. H., Davenport.
Banning, Geo., Davenport.
Boes, F., Davenport.
Bowman, A. W., Davenport.
Braaunlich, H. U., Davenport.
Burnes, Thos., Davenport.
*Crawford, J. P., Davenport.
DeArmand, J. A., Davenport.
*Decker, G. E., Davenport.
DeGraff, E. B., Davenport.
Elmer, W. W., Davenport.
French, L., Davenport.
Glynn, C. G., Davenport.
Hageboeck, A. L., Davenport.
Harkness, G. F., Davenport.
Jappe, C. F., Davenport.
Kegel, E., Walcott.
Kemmerer, C. T., Eldridge.
Kemmerer, T. W., Eldridge
Knox, Jno., Princeton.
Kulp, J. H., Davenport.
Kulp, O. W., Davenport.
Matthey, C., Davenport.
*Matthey, H., Davenport.
McCarthy, D. J., Davenport.
*McCowen, Jennie, Davenport.
*Middleton, G. M., Davenport.
Neufeld, F., Davenport.
Porter, J. R., Davenport.
Preston, C. H., Davenport.
Schmidt, B. H., Davenport.
Sala, O. P., Davenport.
Starbuck, T. D., Davenport.
Stoecks, W. A., Davenport.
Strohbehn, E. F., Davenport.
Van Epps, C., Davenport.
Vollmer, K., Davenport.
Weber, Lee, Davenport.

TAMA COUNTY MEDICAL SOCIETY.

President—Samuel Thompson, Toledo.
Secretary—Wm. Corns, Jr., Montour.
Delegate—N. W. Whithill, Garwin.

*Carpenter, W. E., Toledo.
Corns, Wm., Tama.
Corns, Wm., Jr., Montour.
Coulson, C. P., Chelsea.

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Haynes, A. L., Toledo.
Howland, C. F., Tama.
Meyer, Geo., Gladbrook.
Sievers, H. H., Tama.
Thompson, Benj., Tama.
Thompson, Samuel, Toledo.
Whitehill, N. W., Garwin.

UNION COUNTY MEDICAL SOCIETY.

President—M. B. Reed, Cromwell.
Secretary—J. P. Claybaugh, Creston.
Delegate—J. W. Lauder, Afton.

Ayres, Ed. C., Lorimore.
*Barnes, H. E. W., Creston.
*Claybaugh, J. P., Creston.
Fry, Jay W., Creston.
Gilmore, B. F., Creston.
Hills, Sarna C., Creston.
Johnson, E. M., Afton.
Lauder, J. W., Afton.
Lynch, H. G., Spaulding.
Rawls, J. A., Creston.
Reed, M. B., Cromwell.
Reynolds, Jno. W., Creston.
*Sampson, F. E., Creston.
Schifferle, Ed., Creston.
Tait, T. E., Creston.
Torrey, B. N., Creston.
Wright, W. A., Thayer.

VAN BUREN COUNTY MEDICAL SOCIETY.

President—R. N. Cresap, Bonaparte.
Secretary—J. A. Craig, Keosauqua.
Delegate—R. N. Cresap, Bonaparte.

Atkins, W. W., Milton.
Atkins, A. T., Keosauqua.
Boon, R. L., Bentonsport.
Cassady, S. A., Cantril.
Craig, Jas. A., Keosauqua.
*Cresap, Roger N., Bonaparte.
Harris, W. T., Keosauqua.
Herriford, Henry, Leando.
Johnson, J., Milton.
Kirkpatrick, W. J., Farming'n.
Neff, G. R., Farmington.
Russell, C. R., Keosauqua.
Sherman, M. E., Keosauqua.
Summers, L. F., Milton.
Thieme, G. A., Cantril.
Toben, R. D., Mt. Sterling.
Young, J. A., Bonaparte.

WAPELLO COUNTY MEDICAL SOCIETY.

President—M. W. Pascoe, Ottumwa.
Secretary—C. E. Huband, Ottumwa.
Delegate—L. J. Baker, Ottumwa.

Arenschield, E. M., Ottumwa.
*Baker, L. J., Ottumwa.
*Bannister, M., Ottumwa.
Bay, E. L., Eddyville.
*Brockman, D. C., Ottumwa.
Edgerly, E. T., Ottumwa.

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Finch, H. C., Blakesburg.
*Hauck, S. L., Ottumwa.
*Herrick, J. F., Ottumwa.
Huband, C. E., Ottumwa.
Hull, J. A., Keb.
LaForce, D. A., Ottumwa.
LaForce, W. B., Ottumwa.
LaForce, B. D., Ottumwa.
McCrea, F. M., Eddyville.
Mummert, A. J., Ottumwa.
Newell, W. C., Ottumwa.
Newell, J. F., Agency.
Pascoe, M. W., Ottumwa.
Pope, G. C., Ottumwa.
Powell, Emma S., Ottumwa.
*Sheafe, E. A., Ottumwa.
*Spilman, S. A., Ottumwa.
Tanner, W. C., Ottumwa.
Trueblood, W. A., Ottumwa.
*Vance, F. E., Eddyville.
Williams, A. O., Ottumwa.

WARREN COUNTY MEDICAL SOCIETY.

President—L. H. Suber, Indianola.
Secretary—E. Porterfield, Indianola.
Delegate—Jno. L. Hatfield, Lacona.

Baker, E. L., Indianola.
Blake, J. D., Palmyra.
*Curless, H. C., Churchville.
Dashiell, M. A., Indianola.
Hatfield, Geo. E., Lacona.
*Hooper, M. L., Milo.
Judkins, O. P., Indianola.
*Kemper, J. F., Lacona.
*Hull, F. C., Carlisle.
*McCleary, J. D., Indianola.
*McCleary, H. C., Indianola.
Park, W. M., Indianola.
*Porterfield, E., Indianola.
*Sperow, W. E., Indianola.
Surber, L. H., Indianola.

WASHINGTON COUNTY MEDICAL SOCIETY.

President—G. W. Hay, Washington.
Secretary—C. A. Boice, Washington.
Delegate—E. R. Jenkins, Washington.

Boice, C. A., Washington.
Droz, A. J., West Chester.
Eiskamp, G. H., Washington.
Hay, G. W., Washington.
Hull, J. H., Washington.
Hull, H. C., Washington.
Niblock, G. F., Crawfordsv'le.
*Terry, M. C., Brighton.

WEBSTER COUNTY MEDICAL SOCIETY.

President—R. Evans, Fort Dodge.
Secretary—W. W. Bowen, Fort Dodge.
Delegate—C. J. Saunders, Fort Dodge.

Alton, W. E., Fort Dodge.
Bates, W. R., Fort Dodge.
Bowen, W. W., Fort Dodge.
Carver, W. F., Fort Dodge.
*Churchill, C. H., Fort Dodge.
*Evans, R., Fort Dodge.
*Evans, O. E., Gowrie.
*Huffman, G. F., Fort Dodge.

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*Kime, J. W., Fort Dodge.
*McCreight, A. H., Ft. Dodge.
*Nelson, H. E., Dayton.
Olney, F. B., Fort Dodge.
Riordan, J. C., Barnum.
Ristine, H. G., Fort Dodge.
*Saunders, C. J., Fort Dodge.
Victor, A. L., Fort Dodge.
Wakeman, A. H., Fort Dodge.
Wilson, C. A., Vincent.

WINNEBAGO COUNTY MEDICAL SOCIETY.

President—H. R. Irish, Forest City.
Secretary—L. Wall, Thompson.

Christensen, F., Lake Mills.
Eiel, H. E., Buffalo Center.
Gullixson, A., Lake Mills.
Hansen, Otto A., Forest City.
Irish, H. R., Forest City.
Jones, W. H., Forest City.
Keeler, C. E., Lake Mills.
Lee, G. M., Thompson.
Thompson, H. F., Buffalo Cen.
Vesterborg, P. H., Forest C'y.
Wall, Luther, Thompson.

WINNESHIEK COUNTY MEDICAL SOCIETY.

President—J. S. Roome, Calmar.
Secretary—H. B. Amy, Decorah.
Delegate—E. M. Heflin, Calmar.

Amy, H. B., Decorah.
Barfoot, A. F., Decorah.
Daubney, F. W., Decorah.
*Heflin, E. M., Calmar.
Hoeg, C., Decorah.
Horton, C. D., Ft. Atkinson.
Jewell, P. M., Decorah.
Kiesau, F. W., Frankville.
Lyon, P. T., Ridgeway.
Roome, J. S., Calmar.
Stevens, G. M., Decorah.
Swezey, A. J., Decorah.
Swezey, B. F., Spillville.
Wells, W. J., Ossian.

WOODBURY COUNTY MEDICAL SOCIETY.

President—Guy C. Rich, Sioux City.
Secretary—F. J. Murphy, Sioux City.
Delegate—F. J. Murphy, Sioux City.

Anderson, A., Sioux City.
Bullock, A. H., Cushing.
Bussey, W. J., Sioux City.
Coniff, R. E., Sioux City.
Dales, J. A., Sioux City.
Dailey, M., Sioux City.
Dean, W. W., Sioux City.
*Eichelberger, A., Sioux City.
Fanchere, F. E., Sioux City.
Gibson, C. G., Sioux City.
Glann, F., Holly Springs.
Graver, J. E., Sioux City.
Jepson, W., Sioux City.
Knott, J. M., Sioux City.
Knott, VanBuren, Sioux City.
McLaughlin, A. J., Sioux City.
McLaughlin, P. B., Sioux City.
McQuitty, W.F., Correctionv'le
Murphy, F. J., Sioux City.
Murphy, Geo., Danbury.

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Powell, F. A., Sioux City.
Rice, Chas., Smithland.
Rich., G. C., Sioux City.
Robbins, J. H., Sioux City.
Rouch, Emily, Sioux City.
Savage, J. P., Sioux City.
Sawyer, P. E., Sioux City.
Silver, M. E., Sioux City.
Tyrrell, J. B., Hornick.
Wade, C. M., Sioux City.
Warren, A., Sioux City.
Warren, J. N., Sioux City.

WORTH COUNTY MEDICAL SOCIETY.

President—C. W. Sanders, Manly.
Secretary—E. H. Dwelle, Northwood.
Delegate—J. H. Darey, Northwood.

*Darey, J. H., Northwood.
*Dwelle, E. H., Northwood.
*Graeser, H. B., Kessett.
Hange, L. J., Fertile.
Hanson, A. W., Hanlontown.
Hewitt, L. G., Northwood.
Jones, J. R., Fertile.
Hurd, C. A., Northwood.
Mann, S. M., Grafton.
Phillips, N. W., Hanlontown.
Sanders, C. W., Manly.
Young, E. R., Northwood.

WRIGHT COUNTY MEDICAL SOCIETY.

President—J. H. Sams, Clarion.
Secretary—E. D. Tompkins, Clarion.
Delegate—W. C. McGrath, Eagle Grove.

Beam, H. A., Eagle Grove.
Best, E. E., Clarion.
*Chassell, J. L., Rowen.
*Garth, J. W., Clarion.
Meyer, H. E., Belmond.
*McGrath, W. C., Eagle Grove.
McNaughton, L. D., Eagle Grove.
Morgan, C. H., Clarion.
Morse, C. H., Eagle Grove.
Neil, Blanch, Eagle Grove.
*O'Tool, T. J., Eagle Grove.
*Peppers, J. L., Goldfield.
*Sams, J. H., Clarion.
Thompkins, E. D., Clarion.

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